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APPENDIX TO THE JOURNALS

OF THE

SENATE AND ASSEMBLY

OF THE

FORTY-SIXTH SESSION

OF THE

LEGISLATURE OF THE STATE OF CALIFORNIA

VOLUME V

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3—Report of Board of Medical Examiners, 1923.

4—Report of Board of Medical Examiners, 1924.

5—Report of Board of Directors Veterans' Home, 1923.

6—Report of Board of Directors Veterans' Home, 1924.

7—Report of Board of State Harbor Commissioners, 1923–1924.

8—Report of State Civil Service Commission, 1923–1924.

9—Report of State Board of Equalization, 1923–1924.

10—Report of Directors of State Institutions, 1923–1924.

11—Report of Surveyor General, 1923–1924.

12—Report of State Treasurer, 1923–1924.

13—Report of State Board of Architecture, 1923.

14—Report of State Board of Architecture, 1924.

15—Report of State Purchasing Agent, 1923–1924.

16—Report of State Fish and Game Commission, 1923–1924.

17—Report of Superintendent of Public Instruction, 1923–1924.

CALIFORNIA STATE MINING BUREAU
FERRY BUILDING, SAN FRANCISCO
FLETCHER HAMILTON State Mineralogist
Vol. 19 JANUARY, 1923 No. 1

MONTHLY CHAPTER OF

REPORT XIX OF THE STATE MINERALOGIST

COVERING

MINING IN CALIFORNIA

AND THE

ACTIVITIES OF THE STATE MINING BUREAU

CALIFORNIA STATE PRINTING OFFICE
FRANK J. SMITH, Superintendent
SACRAMENTO, 1923

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CALIFORNIA STATE MINING BUREAU
FLETCHER HAMILTON
STATE MINERALOGIST
OUTLINE MAP
OF
CALIFORNIA
SCALE
OREGON
NEVADA
MEXICO
PACIFIC OCEAN
SISKIYOU
MODOC
SHASTA
LASSEN
TRINITY
TEHAMA
PLUMAS
GLENN
BUTTE
SIERRA
MENDOCINO
COLUSA
YUBA
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YOLO
EL DORADO
SONOMA
NAPA
SOLANO
AMADOR
ALPINE
MARIN
CONTRA COSTA
SAN JOAQUIN
CALAVERAS
TUOLUMNE
MONO
SAN FRANCISCO
ALAMEDA
STANISLAUS
MARIPOSA
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VENTURA
LOS ANGELES
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IMPERIAL
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Mining Division Boundaries.
Mining Division Offices.

PREFACE.

The State Mining Bureau is maintained for the purpose of assisting in all possible ways in the development of California's mineral resources.

As one means of offering tangible service to the mining public, the State Mineralogist for many years has issued an annual or a biennial report reviewing in detail the mines and mineral deposits of the various counties.

The weak point in work of this character has been that the results of field investigations were so long in preparation that they had lost much of their usefulness by the time they finally appeared in print.

As a progressive forward step in advancing the interests of the mineral industry, publication of the Annual Report of the State Mineralogist in the form of monthly chapters was begun in January, 1922.

A monthly publication admits of several improvements over the old method of procedure. Each issue contains a report of the current development and mining activities of the state, prepared by the district mining engineers. Special articles dealing with various phases of mining and allied subjects by members of the staff are included. Mineral production reports formerly issued as an annual statistical bulletin are published herein as soon as returns from producers are compiled. The executive activities, and those of the laboratory, museum, library, employment service and other features with which the public has had too little acquaintance are reported monthly. The assistance formerly given to producers and consumers by consultation or correspondence only, is also proffered through this medium.

While current activities of all descriptions will be reported in this Monthly Chapter, the Bureau will not discontinue its practice of issuing from time to time technical reports on special subjects. A list of such reports now available is appended hereto, and the names of new bulletins will be added to that list in the future as they are completed.

The Monthly Chapters will be subject to revision, correction and improvement. Constructive suggestions from the mining public will be gladly received, and are invited.

Beginning with the January issue the pages are numbered consecutively throughout the year, and an index to the complete reports will be included annually in the December number.

The one aim of the Mining Bureau is to increase its usefulness and to stimulate the intelligent development of the wonderful latent resources of the State of California.

'Mining in California' is sent without charge to those on the Bureau's exchange list and to all others who make written or verbal request.

TO THE MINING PUBLIC.

Through ten years of service as State Mineralogist and executive head of the State Mining Bureau, I have endeavored to build up an institution that would be representative of the mining and oil industry of California, in order to create an organization of service to the industry and to the public at large which would aid in the development of the wonderful mineral resources of the State of California.

Work of this character can be accomplished only by the united effort and cooperation of those serving and the industry to be served. It is with some degree of satisfaction that I look back upon this period and note the marveling growth of the industry and the ability of this Bureau to grow and meet the ever-increasing demands made upon it. This growth has been made possible by the sympathetic cooperation and expression of the prospectors, engineers and owners of properties from all localities in the state, and it is my hope that in the years to come the Bureau's service to the public may increase many fold; I sincerely believe that it has a very important influence on the development of our latent resources.

There comes a time when it is impossible to continue public service without a sacrifice which is greater than personal interests can withstand, and it has become necessary to submit my resignation, which is given herewith.

San Francisco, January 27, 1923.

Hon. Friend Wm. Richardson,
Governor of California,
Sacramento, California.

Dear Sir: I herewith submit my resignation as State Mineralogist of California, to be effective February fifteenth, nineteen hundred and twenty-three.

It is with a certain regret that I terminate my direction of the activities of the State Mining Bureau. I have realized for some time, however, that a continuance in public service was at a sacrifice to my personal interests.

During my administration of ten years, I have recorded the growth of California's mineral production from an annual value of ninety-three million dollars to the astonishing total of two hundred and sixty-eight million dollars, and have endeavored so to organize the State Mining Bureau that its service to the industry and the public would respond to this constantly growing production and the consequent demands because of it, in order that the greatest degree of aid to the development of our latent mineral resources might be attained.

Mining is the basic industry upon which our industrial, and even our agricultural, advancement depends. The proper development of our vast mineral resources, wise encouragement and their sane conservation are surely problems second to none in importance in the upbuilding of our great commonwealth.

We all know of the stupendous development of our oil resources in recent years, in the proper development and production of which the State Mining Bureau has taken no little part, but scant knowledge is had of the fact that a resource of close to two billions of dollars lies dormant in the unworked gravel deposits of California. A report is now well under way which, it is hoped, will focus the attention of the State upon the possibilities of winning this wealth and at the same time aid in the solution of our reclamation, irrigation, power and navigation problems, with which we are all so familiar.

The Great Mother Lode Gold Belt of California, which has produced millions and which will produce many more, is also the subject of another report, now in course of preparation.

California produces, in addition to these two vital resources, over fifty different commercial metal and mineral products, all of which are adding to the wealth and prosperity of the State.

It has been my good fortune to have met and known personally a great many men, connected with the mineral industry, and I am appreciative of the cooperation they have given in the work of the Bureau. A number of the employees have been in the

department for many years, and I take this opportunity of expressing my acknowledgment of their loyal service.

My paramount aim has been to build a tradition of service which would bring to California a recognition of her vast mineral treasure and I trust that the greatest possible support will always be given by the State to this great industry.

Assuring you of my continued interest in the work of the Bureau and the development of the mineral resources of California, I remain,

Respectfully yours,

FLETCHER HAMILTON,
State Mineralogist of California.

It is with regret that I submit this farewell to the State Mining Bureau, as through it I have formed many pleasant associations; and I send greetings to all in the mining industry, assuring you that I shall always have your best interests at heart.

FLETCHER HAMILTON.

DISTRICT REPORTS OF MINING ENGINEERS.

In 1919-1920 the Mining Department was organized into four main geographical divisions, with the field work delegated to a mining engineer in each division working out from a local branch office.

This move brought the Bureau into close personal contact with operators, but did not materially shorten the time between the gathering of data in the field and their publication in the Report of the State Mineralogist at the end of an annual or biennial period.

Mining activities and development noted by district engineers in their respective fields are now embodied in monthly reports published in each issue of 'Mining in California,' thus making these data available within a maximum period of thirty days, and the Monthly Chapter as far as possible a compendium of current mining progress throughout the state.

The counties included in each field division and the location of the local offices are shown on the accompanying outline map of the state. (Frontispiece.)

Although the petroleum industry is but little affiliated with other branches of mining, oil and gas are among the most valuable mineral products of California, and a report by the State Oil and Gas Supervisor on the current development and general conditions in the state's oil fields is included under this heading.

REDDING FIELD DIVISION.

W. Burling Tucker, Mining Engineer.

REVIEW OF MINING DURING 1922.

The principal minerals mined in this district are copper, gold, iron, platinum, silver, zinc and pyrites. Asbestos, cadmium, chrome, clay, coal, diatomaceous earth, limestone, manganese, mineral water, quicksilver, volcanic ash, and pumice have all been produced to a lesser extent, but the industry is dependent mainly upon the first group, each mineral of which is considered separately.

ASBESTOS.

An increased demand for asbestos on the Pacific Coast has led to the discovery and development of promising deposits of this mineral in Shasta County near Sims, Siskiyou County near Edgewood, and in Trinity County in the vicinity of the Strode mine, near Carrville. In the above mentioned localities both amphibole and chrysotile have been developed and during the coming year some of these deposits may be established on a producing basis.

BARYTES.

During the year the barite deposit at Barium, near Copper City, Shasta County, was operated by H. C. Austin and a large tonnage of ore was shipped to Oakland and San Francisco.

CHROMITE.

Chromite is widely distributed throughout Del Norte, Shasta, and Siskiyou counties. There were no producers during the year, owing to

importations of foreign ore which can be landed at consuming centers cheaper.

COAL.

Deposits of coal occur in Humboldt, Shasta, Siskiyou, and Trinity counties, but the majority of these deposits are low grade lignites, usually occurring in rather thin beds. Coal is found in Humboldt County near Gerberville, near Hydesville, on Mad River, and on Maple Creek. In Shasta County beds of lignite coal are found on Cow Creek, in the Ingot district, also on Clover Creek. A vein of semi-bituminous coal is found on Beegum Creek. Deposits of coal occur in Siskiyou County at the headwaters of Kosh Creek, seven miles southeast of Glazier, on the Sisson and Fall River Mills road, also on Willow Creek, about four miles east of Henley. Coal is found in Trinity County in Hayfork Valley, Hyampom Valley, and near Poison Camp.

During the year only a small amount of development work has been attempted on the various deposits mentioned. The coal is used locally for blacksmithing.

COPPER.

There has been little change in the copper situation during the year and practically all the large copper properties with the exception of the Mountain Copper Company, and the Shasta Zinc and Copper Company, remained idle. The former shipped about 500 tons per day of pyrite ore, containing a small percentage of copper, to chemical plants near San Francisco. Their aerial tramway extending from the Hornet mine to Mathewson, a station on the Southern Pacific Railroad, was completed and placed in commission. It is 2½ miles in length, has a capacity of 100 tons per hour, and replaces the Iron Mountain Railroad, used by the company for ore shipments for many years.

The Shasta Zinc and Copper Company completed their new refining plant early in June. The Rising Star mine was operated from June 1st until December 1st furnishing ore for the zinc-oxide plant, but on the latter date both mine and smelter were shut down. It is reported that the company plans to increase the capacity of the present plant, and resume operations early in the spring. The company produced about 12 to 15 tons of copper matte per day, as a by-product from their zinc-oxide plant.

At the Little Nellie mine, owned by the Pittsburg and Mount Shasta Mining Company of Pittsburg, Pennsylvania, a number of men have been employed on development work. The producing mines of Shasta County during previous years were:

The United States Smelting, Refining and Mining Company (Mammoth smelter, and Mammoth, Keystone and Sutro mines); First National Copper Company (Balaklala mines); Mountain Copper Company, Limited (Iron Mountain and Hornet mines); Pittsburg and Mount Shasta Mining Company (Little Nellie mine); and the Atascadero Mining Company (Greenhorn mine), all on the West copper belt. On the East copper belt they were: The Shasta Zinc and Copper Company (Bully Hill and Rising Star mines); and the Afterthought Mining Company (Afterthought, Donkey and Copper Hill mines), at Ingot. In Siskiyou County there was no activity in copper mining during the year, and the Blue Ledge and Grey Eagle, the two most important mines in the county, remained idle.

GOLD.

The high cost of labor and material during the year has curtailed and depressed gold mining. Many mines both large and small have remained closed down, and the few properties that resumed operations during the early part of the year were finally forced to suspend operations.

The substantial increase in wages in the copper, steel and other fundamental industries recently has resulted in a general increase in the wage level and the gold producer is now confronted by still further increase in production costs. In the present condition of the industry, this increased cost can not fail to result in further shutting down of mines, with a consequent wastage of ore reserves, and the rapid deterioration of plants and equipment. The federal government should no longer deny the gold mining industry a necessary adjustment to compensate for the present increased cost of production, but, as a matter of equity and wise public policy, should, without further delay make suitable provision therefor.

GOLD DREDGING.

The only class of gold mining in this district that has materially increased is hydraulic and dredging activity.

The only placers of any importance in Shasta County are those worked by the four dredges. The Shasta Dredging Company operates one boat on the middle fork of Cottonwood Creek, near Gas Point. The American Gold Dredging Company, near Redding, resumed operations the first of January, after a long shut down. The two dredges owned by Louis Gardella of Oroville, operating on Clear Creek, about seven miles southwest of Redding, worked the entire year.

There is renewed activity in dredging in Trinity County on the Trinity River from Lewiston north to Trinity Center.

The Lewiston Gold Dredging Company purchased the Valdor dredge and removed it from Junction City to the Martin ranch, seven miles north of Lewiston, on the Trinity River. The dredge has been rebuilt and heavier equipment installed. It started operations the first of January, 1923.

The Gardella dredge, owned by Louis Gardella of Oroville, was placed in operation on October 1922, on the Paulson ranch, 1½ miles southwest of Lewiston. This dredge is operating upon a gravel bar at a bend in the Trinity River opposite Rush Creek.

The Trinity Gold Dredging Company's dredge located four miles north of Lewiston, operated continuously during the year. Estabrook Gold Dredging Company resumed operations on November 26th after a long shutdown. The dredge is located north of Trinity Center.

The Pacific Gold Dredging Company, who were operating a steel dredge near Carrville, suspended operations early in May, and the dredge is being dismantled, preparatory to shipping it to the Federated Malay States for use in tin dredging.

The Shasta Dredging Company is reported to have acquired the Van Matre ranch near Minersville and will install a dredge on this ground during 1923. There is a possibility that during the coming year, there will be five dredges operating on the Trinity River.

HYDRAULIC MINING.

Hydraulic mining was active in Siskiyou and Trinity counties during the early part of the year. In Siskiyou County hydraulic mining was active near Cecilville, Oak Bar, Forks of the Salmon River, Sawyer's Bar, Scott's Bar and Fort Jones. There promises to be renewed activity in this class of mining during 1923, as a large number of placer mines have installed new equipment to take advantage of winter rains.

The producing placers in the county were: The Black Bear hydraulic mine at Black Bear Creek; small placers at Callahan; Banner and Jefferson Consolidated hydraulic, and Shadows Creek hydraulic near Cecilville; Nugget Bar, Conszetti, Oak Bottom Placer Syndicate, and Victory hydraulic, at Forks of the Salmon and Etna Mills; small hydraulic and ground sluicing at Fort Jones; Sulphur Springs hydraulic on Empire Creek at Gottville; Jahdi hydraulic on the Klamath River at Humbug; Davis Consolidated hydraulic mines, Huey Hill hydraulic and smaller mines at Happy Camp and Hornbrook; Robinson hydraulic mine at Oak Bar; Burns, Casey, Gold Bank, Lanky Bob, Paddy Cronin and the Hickey Homestead hydraulic mines at Sawyer's Bar; Quartz Hill hydraulic mine at Scott's Bar; Portuguese Bar drift at Seiad Valley; Blue Nose and Lange Bros. hydraulic mines at Walker; Big Joe, Wetzel, and other hydraulic and sluicing mines in the vicinity of Yreka. The water season for hydraulic and other gravel mines in this county lasted generally from three to four months.

In Trinity County the active hydraulic mines were: Lorenz Bros. hydraulic mine at Weaverville; The American-Italian Hydraulic Mining Company on Paulson ranch near Lewiston; Snow Gulch hydraulic and smaller mines at Carrville; Underground Treasure (ground sluicing) at Coffee; McAtee Bar on New River; Little Klondike group of hydraulic mines on South Fork of Trinity River, near Forest Glen; a few small hydraulic mines at Hawkins Bar; Eagle and Rattlesnake hydraulic mines at Helena; Red Hill and Jacobs hydraulic mines near Junction City; La Grange hydraulic mine, between Weaverville and Junction City.

The Unity hydraulic mine, four miles north of Minersville, was purchased by the Nugget Bar Placers Company of Oakland and during the latter part of the year a new dam, ditch line, and flume were installed preparatory to starting hydraulic operations the first part of the coming year.

The Pittsburg-Comstock Company of Virginia City, Nevada, acquired the Dannenbrink hydraulic mine, situated on Canyon Creek between Junction City and Dedrick, and planned to start mining operations in January, 1923. The season's run for hydraulic mines in Trinity County is from three to four months.

QUARTZ MINING.

Some activity was shown in quartz mining in Lassen and Modoc counties during 1922. In Lassen County there was increased activity in the Hayden Hill district with the Buckskin and Juniper mines under operation.

In Modoc County development work was in progress on the Big Four and Sunshine mines in the High Grade mining district.

Shasta County.

The only gold mines operating continuously throughout the year were the Milkmaid, Franklin and Sybel mines.

The former ran its 10-stamp mill on dump material. The 5-stamp mill of the Shasta Hills Mining Company was operated continuously on ore from the Sybel mine. Other properties that were small producers or were being developed were: El Dorado, Double Header, Gladstone, Summit and Washington mines in the French Gulch mining district; Reid and Texas Consolidated at Old Diggins; Gold Leaf, Yankee John, Boswell near Redding; West End, Mad Mule and Ganim near Whiskeytown; Independence and Ruby Pearl mines west of Castella. Considerable gold was brought into Redding from different pocket mines located in the Shasta, Whiskeytown and French Gulch mining districts.

Siskiyou County.

There was increased activity in quartz mining in Siskiyou County during the year, and the outlook for this class of mining looks encouraging for the year 1923. The following mines were under active operation: Cub Bear and Homestake mines near Etna Mills; Highland mine near Callahan; Keynote, Hoboken, and Mount Vernon mines near Yreka; Lone Pine, Ida May, Ben Bull mines near Cecilville; Mountain Laurel and Gold Ball mines near Sawyer's Bar; Spring Flag and Eliza mines near Humbug; Gilta mine on No-Nothing Creek; June Bride mine on Trail Creek; Hoboken mine at Fort Jones.

Trinity County.

There was very little activity in quartz mining in Trinity County during 1922 and practically all the work was confined to development.

Properties under operation were:

Lost Horse mine on Scorpion Creek in Coffee district, near Carrville, and the Packer mine near Coffee. Lessees took out ore from the Brown Bear mine at Deadwood. The Strode mine, north of Carrville, was under active development during the year. Layman mine, near Hayfork, was under operation during early part of year, but suspended operations in June. Enterprise mine operated until July when work was suspended; the 10-stamp mill ran part of the time. The Bonanza mine was under development. It is situated in the East Fork mining district near Helena. Trinity Bonanza King mine, north of Trinity Center, was operated by the Foster Gold Mining Company. Gold Leaf mine between Trinity Center and Delta. The Five Pines mine, in the Minersville district two miles north of Minersville, was operated by lessees. Gifford and Venicia mines on Eastman Gulch five miles northeast of Lewiston, were under active development during the year.

INFUSORIAL AND DIATOMACEOUS EARTH.

The Mount Shasta Silica Company of Weed, Siskiyou County, has been incorporated to develop and mine a large deposit of diatomaceous earth. The deposit is located in the northeastern part of Shasta County, close to the line of the Pacific Gas and Electric Company's railroad from Bartle to Pit River.

The holdings of the company are known as the Insulator group, consisting of 39 claims, located in T. 37 N., R. 2 and 3 E., about 20 miles from Bartle. The company plans to start operations in 1923.

IRON ORE.

The Noble Electric Steel Company, Heroult, Shasta County, continued to supply high grade magnetite, carrying 65 to 70 per cent iron, to San Francisco Bay points and Los Angeles during 1922. The shipments have averaged about 10 cars per month, during the year.

LEAD.

The production of lead for 1922 will probably be very small. A few lots of silver-lead ore were shipped from the White Star and Climax mines, South Fork mining district, near Igo, Shasta County, to the Selby Smelting and Lead Company, during the year.

LIMESTONE.

The only production of limestone was from the quarry on the Shasta Iron Company's property, shipped by the Noble Electric Steel Company to the Shasta Zinc and Copper Company at Winthrop for use as flux in the smelting plant.

MANGANESE.

Manganese mining has been stagnant throughout the entire state during the past year. There was no production of manganese from the northern counties during the year.

MINERAL WATER.

The principal production of mineral water in this district comes from Siskiyou County.

PETROLEUM.

The Tuscan Oil Company resumed drilling operations on its property six miles north of Red Bluff. The well is down 1800 feet and is in sand and blue shale.

PLATINUM.

Dredges operating in Shasta and Trinity counties produced practically all the crude platinum reported in 1922. A large part of the Shasta and Trinity crude platinum is osmiridium, recovered by the dredges on Trinity River, and Beegum and Hayfork Creek placers. A large number of claims were located on Hayfork and Beegum Creeks during the year, but the production was small from these placers, probably not amounting to over 10 ounces.

PYRITE.

The Mountain Copper Company, Shasta County, was the only producer of pyrite ore during the year. The ore mined and shipped from the Hornet mine averaged 45% sulphur and .7% copper. The ore is sold to the General Chemical Company and the Standard Oil Company. The latter company returns the pyritic cinder to the Mountain Copper Company's Martinez plant where it is leached and the copper recovered.

QUICKSILVER.

There was no activity in quicksilver mining in Modoc and Siskiyou counties due to the low price of the metal.

SILVER.

The California Bi-Metallic Corporation of Santa Barbara, California, which was organized in August, 1922, took over the Chicago and Silver Falls mine in the South Fork mining district, near Igo, Shasta County. An air compressor and other machinery were installed and additional camp accommodations have been provided. An active development campaign is under way and some high grade ore has been developed. Sixteen men are employed.

Other active mines in the district are the Continental, White Star, and Climax. Shipments of ore were made from the White Star and Climax mines during the year to the Selby Smelting and Lead Company. The prospect for continued activity in the silver mines of this district is bright.

ZINC.

The Shasta Zinc and Copper Company at Winthrop, on the east copper belt, was the only company mining zinc ores in 1922. The ore was mined from the Rising Star mine of the Bully Hill group. The 150-ton reverbatory smelter and zinc-oxide plant was completed in June, 1922, and operated until December, 1922, when operations were suspended due to a fall in price of zinc-oxide.

At this plant the crude ore is crushed to 10-mesh, and the sulphur content is reduced by roasting to make it suitable for reverbatory smelting. The copper, gold and silver are recovered in the matte and this matte is shipped to the Tacoma smelter. The fumes from the reverbatory pass to the first bag house, where the zinc-oxide is recovered. This zinc-oxide, which contains soluble sulphates, is retreated in a refining furnace and then passes to a second bag house where the zinc-oxide is recovered as a marketable product.

It is planned to increase the capacity of the plant and a resumption of operations is contemplated about April, 1923.

The Afterthought Mining Company at Ingot, Shasta County, California, was idle during the year.

AUBURN FIELD DIVISION.

C. A. Logan, Mining Engineer.

II. CONDITION OF MINING IN THE AUBURN DISTRICT, 1922.

(Continued from December Chapter.)

Amador County.

This county remains the principal quartz gold producer on the Mother Lode and in this class of mining is next in point of production to Nevada County, with the probability that in 1923 it will considerably surpass the latter. The total gold yield for 1922 was about $2,000,000. There have been numerous interruptions during 1922 in the operation of the principal mines, among which have been the Argonaut fire and the cessation of milling at the Central Eureka during extensive improvements.

When last visited (January 6), the work of retimbering and clearing the shaft at the *Argonaut Mine* had not been finished and foreman Ben Sanguinetti estimated that 50 feet remained blocked. The section of the shaft from 3350 feet to 2500 feet was the scene of the fire. Many

small caves occurred in this distance, most of them extending about 8 feet back into the wall. The largest cave was 50 feet long, 10 feet wide and 8 feet deep. The shaft was found to be completely filled from the 3100 level to 3350 feet, with rails, pipe, burnt timbers and caved ground, according to Sanguinetti, and allowed only slow progress. It was also filled at intervals above that. After the shaft is cleared, the water, which at this time is 7 sets below the 4500 level, will have to be removed. If no other delays arise meanwhile it will be April or May before milling is resumed.

The Argonaut disaster occurred on August 27 and it would appear that the fire had been burning only a short time when discovered at about 11.30 o'clock that night. As the later developments proved, the fight for the lives of the men underground was lost during the first hour or two after the fire started, if indeed they ever had a chance. The deplorable event attracted the attention of mining men all over the country and many hurried and ill-advised statements were made and given wide circulation. There will probably always be a question in the minds of those best acquainted with the circumstances, as to whether or not any of the means suggested for saving the men could have been successful. There is room for doubt, based on past experience of engineers with somewhat similar fires, as to whether or not the men could have been brought safely through the fire zone in the skip. The matter of ventilation in the Argonaut has not been as well understood as is necessary for an intelligent discussion. Fresh air was drawn into the lower workings through the main shaft, and on account of the depth and extent of the workings the proper ventilation of these lower levels had already become a serious problem. Intermediate levels had to be shut off by doors, and the circulation of air depended on unimpeded entry at one shaft and exhaust through the other, after passing through the lower workings. It was probably only a short time after the start of the fire that caving began in the shaft. There are not enough data at hand to warrant the assertion that enough fresh air could have been forced to the bottom of the mine to keep the men alive, bearing in mind the obstructed condition of the main shaft, even had the Muldoon fan been stopped or reversed at once. It is quite likely that had this been done, it would have been found that as soon as caving began in the Argonaut shaft, the air would have begun to short circuit in the middle levels from the Muldoon shaft and its interconnected raises across the intervening ground to the Argonaut shaft, as for example at the 2400 level.

Disastrous underground fires in California metal mines have been of such rare occurrence that no one has realized the potential dangers from this source. Safety lies in preventive measures, rather than in elaborate fire fighting plans. Shaft timbering should be kept wet enough to prevent burning. Where two mines are working near together at considerable depth, the advantages of a connection in the deeper levels are too obvious to leave room for dispute. With properly protected electric wiring, there is really little danger of underground fire in the California gold mines. Where workings are dry and a great deal of timber is used, fire fighting apparatus should be at hand, as the chief value of such apparatus is in snuffing out small fires, before they get out of control.

Bunker Hill Mine has recently had another change of management, and those now in control have not yet (Jan. 7) decided on a plan for future operation. There was no important production during 1922. At present the mill is idle but the underground workings are being kept unwatered and repaired. Due to the fact that the present control is supposed to be in the hands of those owning the Original Amador Mine adjoining, the idea has gone out that it is planned to explore the latter through the Bunker Hill workings.

Central Eureka Mining Company's mill was idle most of the past summer during extensive improvements above and below ground, which were begun in 1921. The property is now equipped with a new steel headframe 85 feet high, new ore and waste-bins, 53-lb. T-rails in the shaft and electric hoisting equipment capable of working to a depth of 5500 feet. Milling was resumed the middle of August. At present, January 8, they are milling at the rate of about 150 tons a day or 4000 tons a month of ore averaging about $9 a ton, according to Supt. Albion S. Howe. The deepest level is at 4100 feet incline, or 3800 feet vertical depth. The same company is still prospecting the South Eureka, but no important developments have been announced.

At the *Fremont Mine*, the development work during the year has given such encouraging results that the mill is being put in shape for operation, with the prospect of a long run in sight, in the opinion of Supt. B. I. Hoxie. The 1650 level from the Fremont shaft has been run north a total distance of 2500 feet. Hoxie reports that they have drifted 350 feet in ore on this level on the contact vein between the slate and the greenstone. He estimates an average width of eight feet of ore here, and with what was left in the mine when it closed, he thinks they now have enough for several years' milling. The 1950, 2350, 2550, and 2750 levels are being cleaned out. The Gover shaft, 1350 feet north of the Fremont shaft, is 1500 feet deep and will be made use of in the operations. Hoxie has installed a sprinkling system to prevent the possibility of a shaft fire.

The Kennedy Mine and mill have been in operation nearly all the year except for interruption at the time of the Argonaut fire. The mill is handling 200 to 270 tons of fair grade ore from the 3900 and 4050 levels. Legal skirmishing is still going on, preliminary to the suit filed by this company for $500,000 damages against the Argonaut Mining Company and the cross suit of the latter against the Kennedy company for $800,000.

The mill at the *Moore Mine* got into operation early in October. Difficulties and delays incident to initial operations, and trouble in getting out enough ore to keep the mill running, kept them from making much production the first two months. For about 23 days in December the mill of 20 stamps is reported to have crushed 2265 tons, yielding about $6.35 a ton, with a rather high tailing loss. The low returns from the first operations, as contrasted with the reported high assays previously obtained, is attributed to poor judgment in stoping too great a width, as much as 32 feet in width having been mined and milled from the 500 level. Part of this is said to have been low-grade schist containing considerable low-grade sulphides. Alexander Ross, for many years foreman at the Kennedy Mine, has lately been put in charge of underground work, assuring proper attention for this important department of the venture.

The workings of this mine, as far as then opened, were described in the July chapter of MINING IN CALIFORNIA. Since then the 600 level (540 feet deep), has been opened and drifted 213 feet north and 50 feet south, with ore reported for about 100 feet in length on the north. A total crew of 65 men are employed, of whom 35 work underground, and 80 tons of ore are being milled daily. The grade of ore and concentrate is reported to be improving as more careful mining methods are being employed.

Plymouth Consolidated is the only mine in the county that has been continuously productive during 1922. A total of 92,500 tons of ore were crushed during the past calendar year, for a gross production of $460,000, in round numbers, or $5 a ton. Cost per ton and yield per ton have been very near together during 1922, and the tonnage of ore developed for each foot of development work has been low, as the ore has been occurring in rather small lenses. The work for the year was below the 3050 level. The shaft is 3400 feet deep, from which level a winze extends to 3890 feet. Preparations are being made (January 5) to open a new level at 3850 feet. Superintendent Stanley Arnot expresses satisfaction at the assays obtained and the general indications in sinking the last 140 feet of the winze, and the showing on the above date was very good. According to Arnot's figures, the total cost per ton averaged for the entire past year has been about 44 cents less than in 1921, but for December, 1922, there was another marked decrease. There has been, if anything, a decrease in labor efficiency. A total crew of 160 men are employed, of whom 110 are underground. The plants on this property for hoisting and milling have been models of advanced practice since this company reopened the mine. W. J. Loring is general manager.

The *Treasure Mine* was closed September 23. The mill had been operated intermittently during the first half of 1922 on very low-grade ore, but was closed in July. The present owners are said to have no plans for reopening. The lower levels were not profitably productive, although above 2300 feet the mine yielded enough profit to build up a small surplus. The operations had reached a depth of 3030 feet on the incline and the lowest level was at 2970 feet.

Off the Mother Lode in this county there was little actual production of gold noted in 1922 except at the Elephant hydraulic mine at Volcano, two or three smaller hydraulic mines and small scale quartz operations in the Defender district, which have not been visited on account of lack of time.

Calaveras County.

Carson Hill Gold Mines, Inc., has been the only producer on the Mother Lode within the county during the past year. This property now embraces Melones Mine Group, Morgan Mine Group, and Calaveras Group, of which the first two were under operation during 1922. Ore mined from the Morgan has been all from above the 1100 level; that from Melones Mine has come from the levels between 3600 and 4000 feet. The costs of certain mining items for Melones ore, which was raised through a winze, were about double those for Morgan ore. The combined properties produced during 1922 a total of 183,733 tons of ore of a gross value of $1,035,000, in round numbers. Costs of operation have shown a downward tendency, but this is partly due to

increased duty of the milling plant. The thirty stamps of the mill are used for coarse crushing and amalgamation, followed by grinding in Hardinge mills and concentration. The concentrates, sands and slimes are all cyanided under contract. During the year past this mill made a splendid record, handling an average of 15,300 tons a month, giving the remarkable average daily duty of 18.44 tons per stamp with an average of 27.67 stamps in commission. The recovery from concentrates averaged 92% as per contract; from sands and slimes 67.69%, and average actual recovery from all products for 11 months of the year was 90.41%. Average cost per ton for operation and development during 11 months is reported by the company at less than $4 a ton, but this figure, like many averages, is misleading and especially so in this case, because the costs for the two mines were so different. For ore from the Morgan Mine alone, the cost per ton on the basis of the above tonnage would be considerably less. For ore from Melones deeper levels the costs were higher on account of greater depth and the disadvantage of working through a winze. When the winze has been converted to a working shaft, costs of working this ore will be materially reduced, it is hoped. Meanwhile, the joint operation of the two properties is desirable due to the large available tonnages.

The same management has been prospecting several claims at Chaparral Hill, just north of Carson Hill. Surface trenching and underground work have been done on the Tullock, Hardy and Chaparral claims. This work is still being prosecuted with about 20 men.

Calaveras County is fortunate in having such an operator as William J. Loring. At a time when mining on the Mother Lode in the county had come to a standstill, and capital was diverted elsewhere or hidden in tax-free securities, he succeeded in raising money to reopen the *Morgan Mine* and developed in it fine bodies of good ore. This was done when the *Utica, Angels* and *Melones Mining Companies* had quit because of high costs, and the erroneous impression was going out that the Mother Lode in the county was exhausted. The Morgan ore bodies were found within a few feet of the *Melones* workings. Loring's later work in the deeper levels of the *Melones Mine* itself have revealed good ore, and the 4000 level in that mine is now being prepared for stoping. Loring has put in effect many advanced ideas in technical practice and in his relations with the public has exhibited a broad-minded and helpful spirit. In the four years beginning with 1919 the combined properties operated by *Carson Hill Gold Mines, Inc.* have produced $4,161,166.

Among the East Belt mines of the county there has been considerable activity but only a few have been productive during 1922. *Sheep Ranch Mine* was a producer, with 20 stamps running during the first five months of the year. The mine and mill were closed down June 10. When last visited, late in 1921, this mine was producing about $14 ore from small stopes between the 1300 and 1550 levels, and the 1700 level stope was being opened.

Bullion Hill Mining Co., six miles north of Murphy's, was a satisfactory producer during the year, with a 5-stamp mill.

In the West Point district, the mines of which were described in the January, 1922, issue, the year started with promise, as the *Lone Star* and *Keltz* properties were both being prospected by a well-financed company and it was hoped that one at least would show enough ore to

justify a mill. The operators quit early in the year. Some production of high-grade ore was made by a few small operators in this district, among whom the work of W. W. Gibson at the *Columbus Mine* was of interest because of the high grade of ore found there.

At the beginning of 1923 the *Bernardi Mine* in the Mokelumne Hill district is reported showing up well at 200 feet in depth. The *Lamphyre Mine*, a mile south of Mokelumne Hill is reported in process of being unwatered. At the *La Fortuna (Lucas) Mine*, on Mokelumne River, a half mile upstream from the bridge on the Jackson-Mokelumne Hill road, work is going on through an adit and winze. The *Comet Mine*, on the river near Railroad Flat, is also said to be making a promising showing. At San Andreas, a small crew is rehabilitating the *Ford Mine*, now called the *Apex* and electric equipment is being planned for unwatering. Work is continuing underground at the *Triple Lode (Blair) Mine* a mile and a half south of Altaville and was carried on during most of 1922. Lack of time has prevented visiting the East Belt mines of the county during 1922.

Numerous small placer mines are active in the county at the beginning of the year. A few men are working at the *McCann Mine* and the *Red Hill Mine* near Mokelumne Hill, and at other properties near San Andreas. At the *Noce Mine*, five miles east of Mokelumne Hill, F. H. Rindge of Stockton is continuing work and is putting up a hoist. The *Glenn Mine*, three miles north of Mountain Ranch, is to be hydraulicked the present season. Just north of Altaville, the *Victor Land and Mineral Company* is operating the mine formerly called the Reiner, through a shaft 360 feet deep. They found that their shaft was on a high reef of bedrock and the inflow of water was so heavy that it was thought impracticable to sink it deeper by the usual method. A flat winze was therefore driven to bottom the channel, and a drift run back under the shaft, which was then completed by raising. Two drifts have been run nearly east to explore the Central Hill Channel and this channel is now being followed upstream. It is reported to be about 80 feet wide. Small blocks of ground that averaged $5 and $6 a ton according to Supt. J. A. Montreeville, have been breasted northwest and south of the shaft by this company. These areas were a little higher than the main channel and have been called separate channels by the operators. At present, gravel is being washed in a small mill which is only saving the gold in the free wash gravel. The gravel in this channel is cemented in the channel proper and requires a better mill. The mine is equipped with a good hoist and surface plant. This company plans to drift on the Central Hill channel eastward to the end of their property, about a mile.

There has been some activity on the claims of the *Bishop Estate Company* on the Central Hill channel at Vallecito during the past year. The company has had a great deal of geological work done lately by Mark N. Alling.

There has been no copper production during the year from this county, but the announcement has just been made that the *Calaveras Copper Company*, with extensive mines and reduction plant at Copperopolis, plans to resume work early this year and to make extensive improvements.

Tuolumne County.

Belmont Shawmut Mine between Chinese Camp and Jacksonville, has been the only producer on the Mother Lode in this county during 1922. When last visited in November, this company was running 40 stamps of the mill. The workings have reached a depth of 3213 feet, on the dip, below the apex. A total crew of 125 to 130 men are employed, of whom about 75 work underground. Using the system of reduction described in the last monthly chapter, this company has achieved a low milling cost, and in point of total cost of mining and milling has reached almost as low a figure as that achieved at Carson Hill Gold Mines, where a much greater tonnage is handled.

The mill and surface plant at the *Clio Mine* south of Jacksonville was burned down late in the summer. Plans were announced for rebuilding.

The *Crystalline Mine*, a mile and a quarter from Jamestown on the Mother Lode was unwatered early in the year by the Tonopah Mining Company. The drift on the 600 level has been run north the entire length of the claim. Supt. T. C. Black reports that when the water had been removed, the shaft below the water-line was found to be in almost perfect condition and little expense was required to put the workings into shape for operation. The mine yields about 10,000 gallons of water a day, which comes in mostly on the 300 level. According to Black, no particularly good ore had been developed up to November. The *Alabama* claim, adjoining the Crystalline on the north, will also be prospected by this company.

On Jackass Hill near Tuttletown, the *Chileno* and other claims of a large group have been prospected during 1922 by the Nevada Wonder Mining Company. A shaft has been sunk on the Chileno and a cross-cut adit run in the hill, but without developing ore up to November, according to Superintendent T. C. Black.

Plans were under way late in the year for unwatering the *Omega Mine* near Jamestown. No other activity was noted along the Mother Lode. As far as known, there was little, if any production from quartz mines on the East Belt in this county, although several were being prospected.

STRUCTURAL AND INDUSTRIAL MINERALS.

This section of the state contains many valuable deposits of the structural and industrial minerals, and while some of these have been developed on a good-sized scale, it may be said in general, that these minerals have lagged far behind as compared with the metals. They depend upon conditions that do not restrict the gold miner, whose product is so valuable that he can ignore matters of transportation, and does not need a near-by market for his goods, which are always in demand. With the increase in population on the Pacific Coast that is forecasted by many authorities, and with the accumulation of capital among our own people so that it will not be found necessary to go east to finance our industries, there can not help being a hopeful future for these less spectacular but indispensible members of the mineral family.

Brick and tile are manufactured in large quantities near Ione in Amador County and at Lincoln in Placer County. That section of

Amador County has large deposits of fire clay and white quartz sand that are only partly developed and are well located as regards transportation. The plant of Gladding, McBean and Company at Lincoln in Placer County is one of the largest in the country. They make a wide variety of clay products, including especially architectural and building tile and brick, and sewer pipe. The Lincoln Clay Products Company makes a speciality of shipping crude clay for many uses, from their pit near Lincoln. There are several shippers of crude clay from the Ione district, and one firm makes a specialty of fire brick. The market is limited only by the cost of transportation, which determines whether or not they can compete for more distant business.

Placer County has been known for over fifty years for the high grade of granite produced by the quarries at Rocklin and Penryn, but these have not been very active of late, due to the advent of cheaper but less enduring building materials.

El Dorado County is the principal producer of limestone in this portion of the state, but there are large deposits lying idle in the other counties of the district. The largest producer is Pacific Portland Cement Company's Mountain Quarries property a few miles north of Cool, which furnishes lime for cement. Another large quarry below Shingle Springs has been for many years a heavy producer of high grade limestone for industrial uses.

Plans are under way early in January for the opening of a limestone deposit about two miles from San Andreas, and preliminary work has begun.

Tuolumne County has been noted for its marble for many years, and of late the product has begun to receive the recognition from western architects to which it is entitled. Two quarries are in operation and have found an increasing market during the past few years as the merits of the stone become better known. There are other marble quarries in Amador and Calaveras counties.

El Dorado County has several quarries of black roofing slate of which only one is in operation at present.

Promising chrysotile asbestos prospects have been noted in several counties of the district, notably in Tuolumne, Calaveras, Placer and Nevada. One property near Washington, Nevada County, has been productive for several years past. Another near Copperopolis has been developed far enough to make a promising showing.

Asbestos mining has good future possibilities on this coast, but seems to be hard to finance because of the unwillingness of the large consumers to help open properties, in spite of the high prices they pay for Canadian fiber and the heavy freight rates. At this writing, a plan is under way for the proper financing of the Pacific Asbestos Corporation, owners of the deposit near Copperopolis.

There has been a small production of barytes during the year from one property in Nevada County near Liberty Hill. Other prospects have remained undeveloped as far as known. The new tariff of $4 a ton on crude barytes and $7.50 on ground barytes should encourage the opening of known deposits.

Chromite has remained inactive during the past year and only a small production was made from one property in Placer County.

Silica sand has been produced in the past few years at a plant near Ione. Quartz could be produced cheaply from a great many properties

in the district, but the local demand is small and there is only a little production annually in the district.

Soapstone is produced in El Dorado County near Shingle Springs and farther west near the railroad, and finds a market for use in roofing.

A magnesite deposit was opened up near Chinese Camp during 1922, and shipments begun.

SAN FRANCISCO FIELD DIVISION.

C. McK. Laizure, Mining Engineer.

REVIEW OF ACTIVITIES IN 1922 WITH NOTES ON THE OUTLOOK FOR 1923.

During the past year field trips were made into Madera, Mariposa, Mono, San Benito, and Tulare counties, and the mining activities in these counties were quite thoroughly covered. Hurried investigations were also made of a few reported activities in Alameda, Contra Costa, Glenn, Napa, San Mateo, and Santa Clara counties.

Routine office work required much of the engineers' time. These duties and the resignation of Mr. E. S. Boalich from the staff in the San Francisco office made it impossible to adequately cover the twenty-eight counties in this district, and the monthly reports on the mines and mineral resources have been unavoidably meager at times.

The San Francisco division takes in the central, western, and valley counties extending from Mendocino and Glenn in the north to and including Monterey, Kings, and Tulare in the south; also Fresno, Madera, Mariposa and Mono on the eastern side of the great valley.

The district includes about three hundred miles of the Coast Range with the foothills and valleys to the east, and a considerable portion of the foothill and high mountain belt of the Sierra Nevada; consequently a great variety of commercial minerals are produced, including most of the structural and industrial materials, as well as the fuels and metals.

In this review, the fuels, petroleum, and natural gas, although in point of value the most important mineral product, will be omitted; developments in the oil fields of the state being found in the résumé of the petroleum industry by Mr. R. E. Collom, State Oil and Gas Supervisor.

METAL MINING.

In the district under consideration gold production comes mainly from Sacramento, Mariposa, and Mono counties, with lesser amounts from Stanislaus, Fresno, Madera, and Merced.

In the production of gold, Sacramento County ranks fourth in the state, with an annual production ranging from one and one-half to one and three-quarter million dollars, obtained almost entirely from dredging operations by the Natomas Company of California at Natoma.

Other gold dredge operators are the LaGrange Gold Dredging Company at LaGrange, Stanislaus County, and the Yosemite Dredging and Mining Company at Snelling, Merced County. The old dredge of the LaGrange Gold Dredging Company was replaced during the year by a new dredge with larger buckets.

The Yankee Hill Gold Mining Company's dredge, which was wrecked in the Stanislaus River below Knight's Ferry shortly after launching in 1920, has been sold and dismantled.

Dredging operations as a whole will show a normal output for 1922.

In Mariposa, Mono, Fresno, and Madera counties quartz mining prevails, but there is also a small gold production from surface placers, particularly in Fresno County. Interest in gold quartz mining in these counties has increased noticeably, new activities being most pronounced in Mariposa County.

The increased activity during 1922, in most cases probably represents money put into the mines in examination work, development and new equipment rather than increases in actual mine output, but after a long period of closure, such expenditures are unavoidable.

The results of renewed activity will no doubt be shown by a comparatively large increase in gold production from Mariposa County during 1923.

The Original Mining and Milling Company at Clearing House and the Virginia Belmont Mine, three miles south of Coulterville, were in operation and producing during 1922. The Bobbie Mining Company were developing. They erected a new mill on their property in the Moore Hill district. The B. V. D. Mining Company did considerable development work and erected a mill at a new prospect about one-half mile southwest of the Bobbie. The Little Wonder Mining Company was developing its property near Hite's Cove.

Two of the most important mines in the south half of the old Mariposa Grant, the Mariposa and Princeton, formerly large producers, have been reopened. The Quail Mine has been examined by Eastern parties, and the Ruth Pierce has been undergoing repairs with a view to early resumption of mining. The San Domingo Quartz Mine has been bonded, and a bond has also been taken on the Honeycomb, St. Gabriel, and Silver Lead mines by the Simpson Mining Company. The 5-stamp mill was overhauled and development work started. The Texas Hill Mining Company has been actively developing their property in the Kingsley district.

In a new adit at the White Oak Mine five feet of good ore was opened up during recent development.

Unconfirmed reports state that arrangements also have been made for the reopening of the old Mount Ophir Mine at Mount Bullion, and a number of other mines in this county. It was at the Mount Ophir Mine that the 50-dollar gold slugs were minted in the early days.

In Madera County the Kroromick Mining Company, owners of the old Texas Flat and other properties near Coarse Gold, have carried on development work for the past several years and have a large tonnage of ore blocked out. This mine should soon be on the producing list. Among the smaller properties at which there was some activity during 1922, may be mentioned the Mud Springs Mine, Hornet's Nest Mine, Eagle Mine, and the Stayton Mining Company. Most of these properties are equipped with arrastras or small mills of some kind. Gold production in Madera County will not noticeably increase in 1922, but it will likely show some improvement during the present year.

The mines in Mono County have always operated under adverse natural conditions due to the rugged topography, lack of transportation

facilities, sparse population and their generally isolated situation. In spite of these handicaps, prospecting and development on a small scale have been carried on, and the outlook for 1923 points to some improvement in conditions.

In the Antelope Valley, or West Walker district, the Golden Gate Mine and mill has been in quite steady operation. The famous Silverado property in the Patterson district has been acquired by the Mono Mines Company, who expects to open it up on a large scale.

In the Masonic district some work has been carried on at the Pittsburgh-Liberty Mine, the Success Mine and at the Faudre and Welsh, and Brownie Groups.

The Visalia Masonic Mining Company opened up some rich ore in their property known as the Chemung Mine, and equipped it with a mill which was put in commission late in the year.

Leasers have been working in a small way at the Standard Mine in Bodie.

At Mono Lake three companies were putting up plants for the recovery of gold from the lake water. Their success is problematical, but if recovery can be accomplished on a commercial scale, such operations would add considerably to the gold output of the county. It is claimed that as high as twenty cents per ton of water has been recovered in experimental work.

Mining in the Benton District has been very quiet, with only a little development work going on at the Comanche Mine and at the Diana Development Company's property.

The Bishop Community Gold Producers Mining Company has been actively developing the Casa Diablo Mine in the district of that name, during 1922. Several thousand feet of development work was completed and the property equipped with a sawmill, electric generating plant, 10-stamp mill, four-mile electric transmission line and eight-mile water pipe line.

In Tulare County, gold, silver and molybdenum properties have received attention. Warner Barnes and Company have reopened the Bald Mountain Mine in the White River district and the 5-stamp mill has been put in shape to run. Preparations have been made by the owners of the Florence G. Mine to renew mining, and both these properties should be producing early in 1923.

The Deer Creek Silver Mining Company started exploratory work on an old silver mine situated eleven miles southeast of Porterville in an unorganized section adjoining the White River district. This mine was last worked in the 60's or 70's, at which time the ore was hauled to Tipton and shipped.

Kaweah Molybdenum Mines Company did a small amount of development work on their molybdenum deposit in the Mineral King district. The property comprises sixteen claims.

Outside of the operations mentioned, the only other metals of importance in the district, as far as activities during the past year are concerned, were quicksilver and manganese. Quicksilver production was almost at a standstill during 1921 and 1922, but there is promise of resumption of mining on a much larger scale and at more mines in 1923 than for some time past.

The McCumber-Fordney Tariff Act, which took effect late in 1922, placed a duty of twenty-five cents a pound or $18.75 per flask on imports, and this will be of material aid to California operators.

During 1922 the New Almaden Mine in Santa Clara County and the mine of the Western Mercury Company at Cloverdale in Sonoma County were operated on a reduced scale. A small production was also made by Patriquin Bros. from the Dawson Mine, Kings County. Mines that are reported as preparing to resume operations in the immediate future are the Knoxville in Napa County, which will be reopened by H. W. Gould; the St. John Mine in Solano County; the Wideawake, situated on the line between Colusa and Lake counties, by the Consolidated Exploration and Development Company; and the well known New Idria mines in San Benito County.

Quicksilver production for 1922, like that of 1921, will be light, but there will no doubt be a marked increase during the present year.

Two plants for refining or concentrating low-grade manganese ores are in operation, one in Berkeley and one at Redwood City.

The plant in Berkeley, owned by the Consolidated Manganese Company, uses electro-magnetic separation to eliminate silica. The American Manganese Products Company at Redwood City refines silicious manganese ores by a patented chemical process and produces high-grade manganese dioxide, especially suited for dry-cell batteries.

Ore shipped to the above plants came from San Joaquin and Stanislaus counties. No other manganese mining operations were noted in this district.

NON-METALS.

Omitting petroleum and gas, there still remains a large number of structural, industrial, and saline minerals, that are produced in the San Francisco district. Chief among these are cement, miscellaneous stone (crushed rock, etc.), brick and tile (including pottery clay), granite, magnesite, salt, limestone and marl, diatomaceous earth, asbestos, dolomite, feldspar, gypsum, coal and peat.

During the year just passed there has been a growing interest manifested in mineral products of this nature. Freight rates and haulage costs are important factors in the commercial exploitation of the industrial minerals, and the search for supplies close to transportation facilities and the Bay district has been keen.

Established cement plants in this district, one each in Contra Costa, San Benito, Santa Cruz and Solano counties, enjoyed a very prosperous year. Limestone enters largely into the manufacture of the finished material. It is reported that the Riverside Portland Cement Company has acquired a large holding of limestone in Tulare County near Springville. Limestone deposits in Northern California, even though at present undeveloped, suitable for the establishment of cement plants, have a potential value that will no doubt be realized in the near future.

The use of limestone for agricultural purposes, as an indirect fertilizer and soil corrective, is increasing in California, and there has been considerable development along this line. A deposit at Jenkins Hill above Bagby has been leased for the establishment of such a plant. The Bernal Marl Fertilizer Company operates a quarry and pulverizing plant near Eden Vale, Santa Clara County. A steam shovel is used in mining. The mill has been rebuilt and enlarged and has a capacity

of 500 tons per day, requiring 500 horsepower of electric energy. In San Benito County the Pacific Coast Steel Company has bonded and is developing a limestone deposit about ten miles southwest of Hollister. A spur track will be run to the property if sufficient tonnage is developed.

Kaweah Lime Products Company has opened up a new quarry face and increased the capacity of their grinding plant at Terminous, Tulare County. From 90 to 175 tons per day of agricultural lime, paving dust and cement pipe stock is produced.

Pennywell & Company of Lemon Cove are erecting a plant at Terminous for the manufacture of a mineral compost composed essentially of limestone, tricalcium phosphate and sulphur.

The Pacific Limestone Products Company of Oakland has purchased the W. Coplatzi limestone property at Santa Cruz, consisting of fourteen acres. This quarry produces considerable agricultural limestone.

The stone industry, including crushed rock of all kinds, paving blocks, sand and gravel and grinding mill pebbles, follows cement in point of value, and forms the next largest subdivision of the structural materials. The larger producing counties in the district, in order, are Contra Costa, Sacramento, Alameda, and Fresno. A portion of the production from Fresno and Sacramento counties is selected pebbles from the gravel beds of the San Joaquin River and from dredge tailings. These are used as a grinding medium in tube mills at metallurgical plants.

The miscellaneous stone industry is on a firm basis and the business in 1922 was probably somewhat greater than in 1921. Prospects for the coming year are excellent.

Clay products, including brick, tile and pottery clays, is another important subdivision fairly well developed in this district and represented by one or more operations in about half the counties included therein.

The California Pottery Company started operations in the first unit of their plant at Merced. They met with success and plans were immediately made for increasing the installation of four kilns, at present operating, to sixteen.

In Contra Costa County, the Pacific Sanitary Manufacturing Company, organized with a capital of $2,000,000, took over three existing plants, an enameled iron works at North Richmond, and two potteries in San Pablo. Plans are under way for extensive additions and improvements that will increase their capacity about 100 per cent.

The S. P. Brick Company of Exeter, Tulare County, increased the capacity of their plant and now manufactures hollow building tile, as well as brick.

The West Coast Porcelain Company's plant at Millbrae, San Mateo County, has operated steadily, and the plant of the Homer-Knowles Pottery Company at Santa Clara, constructed in 1921, began operations in 1922. The latter company produces high-grade white hotel crockery and chinaware.

Granites of superior quality for building, monumental and ornamental purposes are produced in the district in Madera and Tulare Counties. In Madera the McGilvray-Raymond Granite Company and the Raymond Granite Company have been operating at full capacity supplying granite for various new buildings in San Francisco and Sac-

ramento. The California Granite Company, operating quarries near Porterville, Tulare County, and Rocklin, Placer County, has also been in steady operation. The outlook for continued good business by the granite producers is excellent.

Magnesite is one of the minerals that is mined almost exclusively in the San Francisco Field division, as the bulk of the state's production comes from Fresno, Napa, San Benito, Santa Clara, Sonoma, Stanislaus and Tulare counties. The magnesite industry has been in a rather weak position since war-time activities ended; however, conditions improved in 1922 as compared to 1921, and this improvement bids fair to continue during the present year in even greater proportions.

During the year mining was carried on at the White Rock Mine in Napa County by C. S. Maltby, who has taken it over. The Western Magnesite Development Company's property in Santa Clara County, also under lease to C. S. Maltby, was likewise producing during 1922. Some shipments were made from a deposit near Madrone in Santa Clara County. In Stanislaus County there was one producer on Red Mountain, the magnesite being shipped to Patterson for calcining. Some magnesite was also shipped from Piedra, Fresno County, and the Sampson Magnesite Company produced a little from their deposit in San Benito County. The Sierra Magnesite Company, subsidiary of the National Kellastone Company, operated their mines and calcining plant at Porterville, Tulare County, on a fairly large scale. The Hoff Magnesite Company operated a plant in Oakland, manufacturing magnesite stucco, flooring, etc.

The Tariff Act of 1922 placed a duty on imports of both crude and calcined magnesite, and this has helped to place the industry on a firmer basis.

Asbestos, diatomaceous earth, dolomite and gypsum deposits have received much attention during the year, and there has been considerable development work on deposits of these minerals.

In San Benito County, the California Asbestos Mining Company took a lease and bond on the Long-Ryan Asbestos Mine near Hernandez, and were equipping it with a mill for the production of fiber.

A deposit of chrysotile asbestos, the first recorded occurrence in Napa County, was opened up during the year by James S. Brogan and R. R. Norton. Nineteen claims have been located on what is apparently a large deposit of short-fiber chrysotile.

A number of diatomaceous earth deposits have been investigated, and one or two small producers have been developed in this division. One deposit is near Pinole, Contra Costa County, and one in Sonoma County.

Dolomite has been produced steadily from deposits near Hollister, San Benito County, and gypsum has been developed in Fresno County.

There is a growing demand for practically all of the industrial and structural minerals, and as deposits at present producing are exhausted, others suitably located are eagerly sought.

Impetus was given to the coal mining industry in the district when the Stone Canyon Coal Mine in Monterey County was reopened, in the latter part of 1921. Operations continued during 1922 until after the middle of the year and production reached approximately 200

tons per day. It is reported that the coal had to be rehandled many times between the face and the railroad cars, that mining costs were excessive, and that the mine could not be profitably operated unless at least 500 tons per day was produced. The output could not be raised to that figure, and the mine is again idle. Seventy-five men were employed during the period of active development.

The San Benito Coal Mining Company has been carrying on development on a small scale at their coal mine near Mendota, San Benito County. A 6-foot vein of coal of sub-bituminous character has been opened up.

One of the undeveloped fuel resources of this district is peat. There has been considerable production of peat in California, usually under the name of humus, and used for agricultural purposes, but to date its use as a fuel in California has not been developed. However, there has been some inquiry in regard to the peat resources of California, during the past year, and the following data abstracted from a reprint of Transactions of Commonwealth Club of San Francisco, is informative:

"The large overflowed areas of the interior valleys of California have formerly supported and, except where reclaimed, still support a healthy growth of tule, duck weed, cattail and many other aquatic plants. The entire area both reclaimed and overflowed, must, therefore, be underlaid by peat deposits. The thickest of these is supposed to underlie the area following a line traced around the edge of the marshes and extending from Carquinez Straits to Stockton to Rio Vista, closing at the point of commencement again and covering an area in all of approximately twelve townships, 432 square miles, or 276,460 acres, with peat to a thickness of from six to eighty feet, or an average of forty-three feet. A large portion of this expanse, particularly in the eastern part, has been covered by debris from our early hydraulic mines, while in other portions the peat is more or less sandy. The acreage noted is therefore divided by two, giving as a result 138,248 acres. Of this area 60,000 acres are known to contain good peat to a depth of at least six feet or more. In one acre of land 200 tons of machine dried peat are recoverable for each foot of raw material. The 60,000 acres will therefore contain 60,000 x 6 x 200 or 72,000,000 tons, which will be placed as proved. The 138,248 acres with forty-three feet of peat would contain 138,248 x 43 x 200, or 1,188,932,800 tons. The amount of peat in this area under consideration is given as follows:

Proved	72,000,000 tons
Possible	1,188,932,800 tons

"No attempt has been made at any accurate estimate in the preceding figures, as such would be impossible from any existing data. It is highly probable that a large portion of the 'possible' area will be found unavailable because of mixture with silt. It is also unfortunate for the peat industry that this land is among the most valuable in California for agricultural purposes, as it is questionable if peat products will prove more remunerative than those of agriculture.

"Shallower peat beds are also known to exist in parts of Sutter and Yolo Basins, throughout the marshes on San Francisco Bay, in the marshes near the mouth of the Salinas River and in that portion of Klamath Lake located in California. These areas do not begin to compare in possibilities with those of the lower Sacramento and San Joaquin Rivers."

The principal saline mineral produced in this district is common salt obtained by evaporation of sea water at plants on San Francisco Bay and at Monterey Bay. Alameda County is the largest producer in both this district and the state.

As mentioned previously, a large portion of the engineers' time in this district is taken up in replying to written and personal requests for information relative to the mines and mineral resources of the state. With the publication of lists of mineral products and deposits wanted, and for sale, in the monthly chapters of the State Mineralogist's Report, a fertile field for practical assistance in development was

opened up, and a few words regarding this work may not be out of place.

It was expected that this service would develop into a rather one-sided affair; that is, that there would be a very large excess of materials offered for sale, over those that were wanted by buyers. However, during the entire year, the total number of items, including minerals of all kinds, undeveloped deposits and mines offered for sale, has only exceeded the specific requests for mines of one kind or another, undeveloped mineral deposits or mineral products, by the small total of twenty-six.

This would indicate that there is a strong demand for the commercial minerals, which, if met, must inevitably lead to greater development.

Requests for a source of supply of various products have come from New York, Pennsylvania, New Jersey, Illinois, and other eastern manufacturing states, as well as locally, from both large manufacturing companies and individuals, whose variety of requests easily lead one to believe that everything in the nature of a mineral product is found in California. Fortunately, it is seldom that a correspondent or caller can not be placed directly in touch with producers of the required product or owners of deposits.

Busy individuals and corporations usually accept such assistance as a public bureau of this kind offers, as a matter of course. It is therefore gratifying to note that the files of this office contain a number of acknowledgments of the satisfactory consummation of purchases or sales, directly due to this service, as well as others, stating that negotiations are under way or properties are being investigated.

Of these, some are from prospectors, one of whom has written as follows:

SHOSHONE, CALIFORNIA, January 9, 1923.

CALIFORNIA STATE MINING BUREAU,
Ferry Building,
San Francisco, California.

DEAR SIR: I'm sending sample of mineral in a match box. I would like to know if there is a possible chance of borax being in it—or other salts. It's out of the borax formation here. It means a deal going through if there is any kind of borax in it, with my other borax claims.

I have not received the November and December Monthly Chapters of "Mining in California."

I got in touch with some of the people who want minerals, in your last Monthly Chapter, and I'm sending samples away.

Now I wish to say—whoever gets up the Monthly Chapter of "Mining in California" is surely a master in the mining game—even a rough-neck miner and prospector like me can understand it, and he gets in touch with the mining man and ore buyers, etc. It does more, the chapters, to build up the mining industry than all the newspaper advertisements in a million years—because you get in touch with the buyers—one live mine brings 50 moneyed men in camp like bees in a water bucket. If the funds should run low—and the State don't contribute it—I'll put all I can to keep the Monthly Report a going; and I will rustle more—and if all the prospectors do likewise it will help.

Hoping this meets your good will, I remain

Respectfully,

(Sgd.) ROCKY MT. GEORGE,
Death Valley Prospector, California.

This assistance in development is especially appreciated in the mining of the nonmetallic minerals, the marketing of which differs widely from that of the metals.

A letter was recently received from a company in Detroit, Michigan, which is putting a new automobile accessory on the market. Each instrument will require about one-half pound of quicksilver. This use for the metal is entirely new. As they expect, when in production, to average two thousand instruments per day, their control of a mine or primary source of supply is imperative. It is to such requests that the State Mining Bureau alone can supply unprejudiced and authoritative information.

The Bureau is kept in close touch with industrial demands through these inquiries. Arsenical ores, long penalized by smelters and the bane of cyanide plants, are now wanted, due to the present demand for arsenic as an insecticide in fighting the boll-weevil and other pests. The records and reports of the Bureau, since its inception, are proving invaluable in locating many such rarely-wanted minerals when a demand develops.

It is hoped that the service offered producers and consumers will be even more valuable to the mining industry during 1923 than it was during its initial year, 1922.

LOS ANGELES FIELD DIVISION.

M. A. Newman, Mining Engineer.

REVIEW OF MINING FOR 1922.

Scope of Industry:

This division consists of the following eleven counties in the southern part of the state: San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange, San Diego Imperial, Riverside, San Bernardino, Inyo and Kern counties. In area, these counties cover 66,543 square miles.

Among the minerals found in this region are: Antimony, asbestos, barytes, bituminous rock, borax, clay, cement, chromite, diatomaceous earth, dolomite, feldspar, Fullers earth, gems, gold, graphite, granite, gypsum, magnesite, manganese, marble, mineral paint, mineral water, molybdenum, natural gas, petroleum, potash, pumice, quicksilver, salts, silver, soda, stone, strontium, talc, tungsten and zinc.

Reference will only be made to the most important minerals mined during the year, and then only to such salient features as may prove of interest and value to the public.

Production for the Year 1922:

The actual figures for 1922 will probably not be available, as regards the mineral production in this district, until about the middle of this year. However, if we glance at the figures for 1921, we can make a fair estimate of whether there should be an increase or decrease in any particular mineral, if conversant with the general business conditions affecting it. In the April to October number, inclusive, of 'Mining in California' can be found the actual production of any mineral, for 1921.

In 1921, the value of the mineral production of this district was $213,014,760. Of this amount, approximately $188,850,696 should be

credited to petroleum and natural gas leaving $24,164,064 to be apportioned among the other minerals, as follows:

Borax	$338,905
Cement	4,633,437
Clays, brick, tile	3,941,491
Gold	383,176
Potash	211,067
Silver	3,299,543
Talc	120,625
Miscellaneous stone	2,962,127
Balance	8,273,693

Let us now briefly discuss the outstanding features of 1922 production.

Metallic Group. There was practically no production of antimony, chromite, molybdenum, or tungsten during the year.

There was considerable scouting for gold mines, and quite a number of prospects are being reopened. This is especially true in the Randsburg district. In this district the Yellow Aster, King Solomon, Baltic, and Black Hawk operated during the year, and a number of mines in the so-called Stringer zone are being reopened. In the Mojave district, the Yellow Dog Mine is being developed. This property, as a prospect, has a remarkable showing of high-grade gold ore. It lies but a short distance from the old Exposed Treasure Mine, which, in times past, had a large gold production. In the Big Bear region, San Bernardino County, the Gold Mountain property operated both mine and mill during 1922. It was reported the property has recently been sold to an Arizona syndicate. In the Black Hawk district, San Bernardino County, Voorheis and Del Mar are developing the Arlington group of claims. They claim to have a very large tonnage of $4 ore, which they believe can be profitably worked. It is expected that a milling plant will be erected on this property sometime during 1923. The Zenda Mining Company, in the Amalie district, Kern County, resumed operations during the year, and is now running its 100-ton plant. The Tropico Mine, near Rosamond, also operated steadily during the year.

The rise in the price of lead from around 4¢ to 7¢ during the year was reflected in increased operations in the Cerro Gordo, Darwin and Tecopa lead mining districts. The Cerro Gordo Mines Company operated its 50-ton lead concentrating plant at Keeler to full capacity during the year. The Darwin Mining Company was leased to the Darwin Leasing Company. This company put in operation its 80-ton mineral separation flotation plant, at Darwin. At Tecopa, the Tecopa Consolidated Mines Company operated its 100-ton flotation plant to full capacity. The Carbonate Mine, near Zabriske, resumed shipments to the smelters, as well as a number of other small properties mining high-grade silver-lead ore.

The silver bearing area of the Randsburg district surrounding the California Rand Silver, Inc., locally known as the Kelly Mine was the scene of much prospecting and shaft sinking, with the hope of finding other ore bodies of the richness and extent that the Kelly possesses. Fully thirty companies are actively mining in this region, some of which have found ore that may develop into bodies of commercial

value. Next to the Kelly, the Coyote, owned by the Randsburg Silver Mining Company, has developed a considerable tonnage of both shipping and milling ore.

The finding of ore in the Silver King shaft at a depth of 580 feet has given much encouragement to many of the companies. Ore of a milling grade is also reported to have been cut in the Grady shaft, at a depth of 975 feet. If this ore be cut again at an additional depth of 100 feet, the statement of some that it is only a one-mine camp will be subject to considerable modification.

Litigation over apex and extralateral rights between the Kelly and Coyote property is having a detrimental effect upon the conservative mining element who would like to enter the camp. While the camp does not possess the feverish activity that was seen at Goldfield, Tonopah or Divide, the general public is getting a much better run for its money, as it is practically all going into real development of the mines, for which the camp is to be congratulated. The dividend distribution of the California Rand Silver, Inc., during 1922, amounted to $1,100,600, and the total dividends paid in the three and a half years of its existence have amounted to $2,169,600.

The silver region of the Randsburg district will be treated in detail in a special bulletin to be shortly issued.

The amount of zinc mined during the year was negligible.

Non-Metallics: The most important minerals of this group mined during the year were borax, clay, diatomaceous earth, gypsum, limestone, potash. Cement, though an artificial product, is in this class.

The Sterling Borax Co., at Lang, did not operate during the year. So, practically all the borax produced, can be credited to the Pacific Coast Borax Company, with a small amount made as a by-product for the American Trona Company, at Searles Lake. An item of importance is the construction at present of a refinery at Wilmington, near Los Angeles, by the Pacific Coast Borax Company. This will enable the company to make a considerable saving in freight charges, as at present its borax is being sent to the Stauffeur Chemical Works at San Francisco and to Bayonne, New Jersey, for refining.

The Celite Products Company at Lompoc was the largest producer of diatomaceous earth. The Featherstone Company, at Covina, opened up its deposit during the year and placed its plant in operation and is now in the market with diatomaceous earth products.

The completion of a 25-mile narrow gauge railroad from Maria, a station on the San Diego and Eastern railroad, to the gypsum deposit of the Imperial Gypsum Company, in Imperial County, near the San Diego line, was the outstanding feature of the gypsum industry. At present the Imperial Gypsum Company is shipping 150 to 200 tons a day to the Blue Diamond Materials Company, at Los Angeles. The U. S. Gypsum Company, as usual, supplied the bulk of gypsum used as land plaster and by the cement plants as a retarder, from its deposit at Amboy.

The California Graphite Company, at San Francisquito Canyon, leased its property to the Flake Graphite Company. This company, the latter part of the year, operated the plant and sold graphite in the local market.

The American Magnesium Company is building a 30-mile mono-rail line from its magnesium sulphate deposit to a point 6 miles south of

Trona. It also proposes to build a refining plant at either Los Angeles or San Pedro to manufacture magnesium carbonate and Epsom salts.

The American Trona Company on Searles Lake, resumed the manufacture of potash during the year. The West End Chemical Company, at Searles Lake, also manufactured a small quantity of potash and borax.

Around Owens Lake, the Natural Soda Products Company was the largest producer of soda.

Due to the great activity in building, the cement and sand crushing plants, as well as those engaged in the manufacture of brick and tile, experienced an extremely profitable year.

In the clay industry, an important deposit has recently been opened by the Pacific Clay Products Company, six miles south from Oceanside, San Diego County. This clay deposit, found on the Kelly Ranch, is said to be the equal, both in quantity and quality, of anything thus far discovered in southern California.

Considerable attention was paid to the oil or tar sands in San Luis Obispo County during the year. The California Oil Corporation has erected a 200-ton pilot plant to treat sands from its deposit, 4 miles south of San Luis Obispo.

The American Canadian Corporation also intends to work the sands from its deposit in the Tyber field, using the so-called McClave Process for the recovery of the oil.

Outlook for 1923:

It is reasonably safe to prophesy that both metal and non-metallic mines will be more active during this year than last, with the possible exception of those of silver. As is well known, there now remains but 60 million ounces of silver of the 207 million sold during the war, to be bought under the Pittman Act, and this purchase will probably be concluded sometime during the year. Unless some action be taken by Congress to stabilize silver, there will be nothing to prevent silver in the United States from conforming to the world market price, which now ranges between 60 and 70 cents per ounce.

The McCumber-Fordney Tariff will aid some producers materially, as nearly all the minerals have received additional protection. An example of this is the $4 tariff placed on silica, which was on the free list before. Quicksilver also receives a protection of 25 cents per pound, or $18.75 per flask, while under the old tariff it had a 10 per cent ad valorem duty on it.

Another most important factor, which should contribute toward better conditions in mining during this year has been the reduction and stabilization of railroad rates, together with a fairly settled wage scale, thus enabling one to estimate costs of production with more certainty. This will allow many operators to embark in mining enterprises, with much more confidence as to ultimate outcome than in these last few years following the war. In other words, normalcy will more nearly have arrived in 1923.

Labor Situation:

There will probably be no reduction in wages in 1923, the present scale being stabilized, with the possible exception of Randsburg. At Randsburg, today, machine runners receive $6 to $6.50 per day, and

as long as the Pittman Act remains in force, this rate will stand. It is quite evident, however, that this wage scale will drop to the general wage level as soon as silver drops to the world market price. Due to the activity in the building trades and manufacturing industry, and also aided by the present immigration act, it does not appear as though there will be much surplus labor seeking employment at the mines. While, before the war, mine labor was among the best paid in the United States, today it can not compete against the building trades and many industries, and, as a result does not attract as good a class of men, as formerly.

Generally Recognized Needs of the Industry:

Cheaper power and better transportation facilities will do more to develop our mineral resources than anything else. Inasmuch as most of the mines are so widely scattered, especially in the desert regions, the cost of constructing power lines and building roads to districts containing but one or two small mines, would be prohibitive. With the general development and populating of the country, power lines and roads would be built and the small mine or camp will then be able to take advantage of such to its own economic benefit. The potential wealth of the desert regions is immense, but its exploitation must necessarily be gradual and subject to the economic laws of production.

OIL FIELD DEVELOPMENT OPERATIONS.

R. E. Collom, State Oil and Gas Supervisor.

FEATURES OF 1922 PRODUCTION.

California broke all previous records in the production of 139,000,000 barrels of petroleum during 1922. This is an increase of 24 million barrels over the production of 1921. It represents one-fourth of the crude oil produced in the entire United States. The State Oil and Gas Supervisor estimates that the quantity of refinable crude produced alone, crude above 20 degrees Baumé, almost equalled the entire 1920 production of all grades of crude, which was 105,700,000 barrels.

The great increase in the production of refinable crudes is due to the flush production taken from the three intensively drilled new oil fields of Los Angeles and Orange counties. The total production of these fields was 41,000,000 barrels, distributed as follows: Huntington Beach, 11,500,000 barrels, Long Beach, 18,300,000 barrels, and Santa Fe Springs, 11,200,000 barrels. Santa Fe Springs, with 75 producing wells, and Long Beach, with 135 producing wells, are each producing more oil than the entire Midway-Sunset district which covers an area of 46,000 proved acres and has 2600 producing wells.

The rapid drilling in southern California caused a reduction in the price of crude in July, 1922, to 60 cents per barrel, for oil under 20 degrees Baumé. From that time the price remained firm until January, 1923. On January 5, 1923, prices of the lighter grades of crude, above 20 degrees Baumé, were reduced. This reduction, being placed upon the lighter grades only, caused that portion of the state's petroleum coming from the flush production of the new fields to bear its just burden of the general situation of overproduction. The price reduction ranged from 1 cent a barrel on oil of 20 to 20.9 degrees Baumé to 50 cents on oil of 35 degrees Baumé, and above.

Consumption has been greatly increased by shipments of crude and fuel oil to the Atlantic Coast via the Panama Canal. Existing differentials in prices and transportation costs between California crudes and the so-called Mexican light crude are enabling California marketers to ship oil in quantities estimated as high as 50,000 barrels daily. This condition has created a new outlet for California petroleum.

California production still leads consumption by about 2,000,000 barrels monthly. In addition it is estimated that 2000 wells, with a normal output of about 72,000 barrels, are shut down. A large part of the oil shut in is heavy grade, less than 20 degrees Baumé. Oil in storage at the end of December, 1922, was about 1,000,000 barrels in excess of the storage of May, 1915, the previous high point for stored oil. Production at the close of 1922, not including potential production shut in, was 170,000 barrels in excess of the average production increase over the period 1911 to 1921, inclusive, and consumption was 35,000 barrels in excess of the average consumption increase over the same period.

Drilling was concentrated in the Huntington Beach, Long Beach and Santa Fe Springs oil field during 1922 and greatly curtailed in the other fields, especially in the San Joaquin Valley. Very few wells are being drilled in the oil fields of Fresno, Santa Barbara and Ventura counties. On the whole, however, more new wells were reported to the State Oil and Gas Supervisor in 1922 than in 1921. 1439 new wells were reported in 1922 and 1287 new wells in 1921. 799 new wells, 55 per cent of the drilling of the State, were reported in the three new fields: Huntington Beach, 193 wells, Long Beach, 348 wells, and Santa Fe Springs, 258 wells.

The present situation of overproduction in California is due primarily to the competitive drilling of offset wells on or adojining small property holdings. In the development of each of the three new fields town-lot drilling has played a predominating part. Town-lot drilling should not be confused with close drilling or small acreages per well. The spacing of wells in several California fields, such as Kern River and McKittrick, are on an average basis of 2.0 to 2.4 acres per well. In these fields, however, are ten, twenty and forty acre tracts, or larger, in which wells were spaced according to what the operator considered was the most economical plan for extracting the oil.

In town-lot drilling every well is in a sense an offset well. The size and shape of the property controls the spacing of offset wells. They may be only 50 feet apart. Offset wells are not drilled so much for the purpose of developing and producing that oil to which each operator has an unhindered right, within his own property lines, as to get the oil lying under each side of the boundary line, which will move to the well first drilled into the oil sand. This condition is one of the recognized fundamentals of oil field development, and where properties are leased, the leases carefully safeguard each lessor's interest as opposed to the adjoining lessor. The necessities of drilling offset wells, to meet lease requirements, is therefore, one of the greatest contributory factors to forced drilling where small property ownerships are involved.

Intensive offset drilling necessitates abandonment of the principle of leaving certain quantities of recoverable oil in its underground storage until the maximum profit can be obtained, and then bringing the oil to the surface by drilling the wells according to established oil field

practice, as to spacing and careful drilling methods. Wells are raced to production and each new producing well calls for a number of offsets.

In the town-lot oil fields wells have been drilled as close as three to an acre. Town-lot drilling brings rapid recovery of flush production. For the industry as a whole it means serious over-production. For the operator drilling in congested areas there is not enough oil underground to yield a profit for all against the cost of each well, the productive unit.

The rate of production of California petroleum has its high and low points, like every other oil producing district, in the inexorable workings of the law of supply and demand. It would seem possible, however, by careful study of development problems and intelligent effort, to level off some of the extremely high and low points in the curve. Sometimes, when oil is badly needed, as in the war period, operators do not know where to get it, or how best to get the maximum output with minimum use of money, men and materials. In the present condition much oil is available but it is being produced like a big gusher out of control, because there is not the proper economic machinery to regulate the flow.

It is possible that some of the economic evils of town-lot drilling could be eliminated by carefully considered legislation. Such legislation should recognize the equitable right of every property owner in the oil under his land, whether a small lot or ten acres, and should rigorously prevent the exploitation of California's most valuable mineral resource by the stock jobbers and "uniteers."

From December 9, 1922, to and including January 13, 1923, the following new wells were reported as ready to drill:

Company	Sec.	Twp.	Range	Well No.	Field
KERN COUNTY:					
Pacific Oil Co.	35	30	24	92	Elk Hills
Pacific Oil Co.	35	30	24	101	Elk Hills
Berry & Ewing	31	32	24	9	Midway
Formax Oil Co.	36	32	23	2	Midway
North American Oil Cons.	4	11	23	2	Midway
Pacific Oil Co.	7	32	24	70	Midway
Pacific Oil Co.	31	31	24	257	Midway
Pacific Oil Co.	1	32	23	119	Midway
Pacific Oil Co.	35	31	23	73	Midway
Pacific Oil Co.	27	31	23	61	Midway
Geo. B. Bush	4	11	23	1	Sunset
Ash Oil Syn.	35	26	18	1	----------
LOS ANGELES CO:					
Standard Oil Co.	20	3	10	M-C 98	Coyote Hills
Bartholomae Oil Syn.	29	4	12	2-A	Long Beach
Belridge Oil Co.	29	4	12	1	Long Beach
California Co-Operative Oil Syn.	24	4	13	1	Long Beach
California Signal Syn. No. 1	19	4	12	1	Long Beach
Cooper Petroleum Corp.	19	4	12	1	Long Beach
Cordary Syn.	19	4	12	1	Long Beach
Crown Syn.	19	4	12	1	Long Beach
Dabney Oil Syn.	19	4	12	22	Long Beach
Davis-MacMillan Syn.	30	4	12	2	Long Beach
Thomas Donley	19	4	12	Casa Blanca 2	Long Beach
Walter H. Fisher	30	4	12	3	Long Beach
Fred B. Foster & Co.	19	4	12	4	Long Beach
George F. Getty	29	4	12	4	Long Beach
Golden Eagle Oil Co.	29	4	12	1	Long Beach
Graham & Loftus	19	4	12	3	Long Beach
Graham & Loftus	19	4	12	2	Long Beach
Henderson Pet. Syn.	20	4	12	Dodge 2	Long Beach
Hub Oil Co.	24	4	13	Lukas-Paulos 1	Long Beach
Hub Oil Co.	24	4	13	White 1	Long Beach
Huntington & Northern Pet. Co.	30	4	12	2	Long Beach
Industrial Oil Syn. No. 5	29	4	12	5-1	Long Beach
Interstate Oil Corp.	29	4	12	Babcock 1	Long Beach
Keck Syn. No. 5	30	4	12	5	Long Beach
K. Lundeen and M. E. Lee	30	4	12	2	Long Beach
C. L. McWherter	19	4	12	Patton 1	Long Beach
Maier-Yerkes	30	4	12	1	Long Beach
Moore-Tobias & Couden	30	4	12	3	Long Beach
Moore-Tobias & Couden	30	4	12	4	Long Beach
Mutual Oil Assn.	30	4	12	2	Long Beach
Oceanic Oil Co.	29	4	12	3	Long Beach
Painted Hills Oil Assn.	19	4	12	3	Long Beach
Regina Pet. Corp.	24	4	13	1-A	Long Beach
Shell Co.	29	4	12	Alamitos 6	Long Beach
Shell Co.	29	4	12	Harriman Jones 1-A	Long Beach
Shell Co.	29	4	12	Binkley 1	Long Beach
Shell Co.	29	4	12	Babb & Tucker 2	Long Beach
Shell Co.	29	4	12	Hutton Com. 3	Long Beach
Shell Co.	29	4	12	Goddard 3	Long Beach
Sherman Oil Co.	29	4	12	1	Long Beach
Transport Oil Co.	30	4	12	4	Long Beach
Union Oil Co.	30	4	12	L. B. Com. 8	Long Beach
United Oil Co.	30	4	12	Hass 3	Long Beach
United Oil Co.	30	4	12	Hass 4	Long Beach
Wellington Hopkins Oil Syn.	30	4	12	Long Curtis 1	Long Beach
West Continental Oil Co.	19	4	12	2	Long Beach
Western Pet. Co.	19	4	12	1	Long Beach
Western Star Oil Co.	19	4	12	Campbell 2	Long Beach
Western Star Oil Co.	29	4	12	Robinson 3	Long Beach
Union Oil Co.	2	2	12	La Merced 27	Montebello
Crawford Syn Oil Co.	12	3	16	1	Newhall
Anchor Oil Co.	6	3	11	2	Santa Fe Springs
Are Bee Oil Syn.	36	2	12	2	Santa Fe Springs
Associated Oil Co.	4	3	11	Benton 1	Santa Fe Springs
Boeseke Oil Co.	4	3	11	3	Santa Fe Springs
Coalinga Mohawk Oil Co.	6	3	11	Mutual 1	Santa Fe Springs
General Pet. Corp.	5	3	11	Santa Fe 11	Santa Fe Springs
General Pet. Corp.	6	3	11	Santa Fe 86-B	Santa Fe Springs

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES COUNTY—Contd.					
General Pet. Corp.	6	3	11	Hill Midway 2	Santa Fe Springs
General Pet. Corp.	6	3	11	Santa Fe 89-B	Santa Fe Springs
General Pet. Corp.	5	3	11	Anderson 53-A	Santa Fe Springs
George F. Getty	6	3	11	10	Santa Fe Springs
Hamilton Oil Syn. No. 5	7	3	11	5	Santa Fe Springs
M. & H. Oil Co.	36	2	12	1	Santa Fe Springs
McKeon Drilling Co.	6	3	11	Boeseke 2	Santa Fe Springs
McKeon Drilling Co.	4	3	11	B. G. & T 1-B	Santa Fe Springs
Santa Fe Chief Oil Syn.	35	2	12	1	Santa Fe Springs
Santa Fe Springs Oil Syn. No. 2	7	3	11	1	Santa Fe Springs
Santa Fe Springs Oil Syn. No. 3	7	3	11	1	Santa Fe Springs
Security Oil Syn.	7	3	11	1	Santa Fe Springs
Southern California Oil Co.	6	3	11	1	Santa Fe Springs
Standard Oil Co.	6	3	11	Walker Com. 8	Santa Fe Springs
Standard Oil Co.	6	3	11	Koontz 4	Santa Fe Springs
Standard Oil Co.	6	3	11	Johnson 4	Santa Fe Springs
Standard Oil Co.	6	3	11	Johnson 3	Santa Fe Springs
Standard Oil Co.	1	3	12	Watson 1	Santa Fe Springs
Joe B. Turman Syn. No. 2	12	3	12	2	Santa Fe Springs
Union Oil Co.	6	3	11	Bell 18	Santa Fe Springs
Union Oil Co.	6	3	11	Bell 19	Santa Fe Springs
Union Oil Co.	6	3	11	Bell 23	Santa Fe Springs
Union Oil Co.	6	3	11	Bell 24	Santa Fe Springs
Union Oil Co.	6	3	11	Alexander 5	Santa Fe Springs
Union Oil Co.	6	3	11	Alexander 8	Santa Fe Springs
Union Oil Co.	8	3	11	Meyer 16	Santa Fe Springs
Union Oil Co.	6	3	11	Alexander 6	Santa Fe Springs
Union Oil Co.	5	3	11	Farwell 3	Santa Fe Springs
Union Oil Co.	31	2	11	Bell 20	Santa Fe Springs
Universal Cons. Oil Co.	5	3	11	2	Santa Fe Springs
C. C. M. O. Co.	15	4	14	Torrance 4	Torrance
General Pet. Corp.	8	4	14	Carson 2	Torrance
Hub Oil Co.	15	4	14	Smith 1	Torrance
Petroleum Midway Co., Ltd.	8	4	14	Craven 1	Torrance
Shell Co.	9	4	14	Torrance 1	Torrance
Fresno Petroleum Co.	3	4	13	2	----------
Shell Co.	11	5	12	Bryant 1	----------
ORANGE COUNTY:					
A. B. C. Syn.	35	5	11	2	Huntington Beach
Central Oil Co. of L. A.	2	6	11	Community 2	Huntington Beach
Culver Oil Co.	2	6	11	1	Huntington Beach
George F. Getty	2	6	11	1	Huntington Beach
Holly Development Co.	2	6	11	Turley 3	Huntington Beach
Jameson Pet. Corp.	2	6	11	Block B-1	Huntington Beach
Miley Keck Oil Co.	35	5	11	27	Huntington Beach
M. H. Mosier Special	2	6	11	Porter 3	Huntington Beach
Shell Co. (U. D.)	34	5	11	Ashton 6	Huntington Beach
Standard Oil Co.	35	5	11	Hunt. G. 2	Huntington Beach
Standard Oil Co.	3	6	11	Hunt. B. 19	Huntington Beach
Standard Oil Co.	34	5	11	Hunt. B. 18	Huntington Beach
Union Oil Co.	34	5	11	Brooks 8	Huntington Beach
Union Oil Co.	35	5	11	Hill Com. 2	Huntington Beach
United States Oil Corp.	2	6	11	2-A	Huntington Beach
White Behr Pet. Syn.	2	6	11	Jackie Coogan 3	Huntington Beach
Union Oil Co.	29	3	9	Morse 4	Richfield
Union Oil Co.	29	3	9	Chapman 17	Richfield
Union Oil Co.	29	3	9	Chapman 24	Richfield
SAN BERNARDINO COUNTY:					
J. C. Marquardt	6	1	6	1	----------
SONOMA COUNTY:					
Beach & Landini	4	9	9	1	----------
VENTURA COUNTY:					
Dr. J. Von-Gal-Scaleh	--------	2	21	1	Conejo
Dr. J. Von-Gal-Scaleh	4	1	20	2	Conejo
Dr. J. Von-Gal-Scaleh	4	1	20	3	Conejo
Dr. J. Von-Gal-Scaleh	4	1	20	4	Conejo
Dr. J. Von-Gal-Scaleh	4	1	20	5	Conejo
Dr. J. Von-Gal-Scaleh	4	1	20	6	Conejo
Dr. J. Von-Gal-Scaleh	4	1	20	7	Conejo
Hopper Canyon Oil Co.	3	4	19	1	Sespe
General Petroleum Corp.	28	3	23	Barnard 5	Ventura
Shell Co.	23	3	23	Hartman 2	Ventura

SPECIAL ARTICLES.

Detailed technical reports on special subjects, the result of research work or extended field investigations, will continue to be issued as separate bulletins by the Bureau, as has been the custom in the past.

Shorter and less elaborate technical papers and articles by members of the staff containing much information that will add to the permanent value of the Monthly Chapter are included in each number of 'Mining in California.'

It is anticipated that these special articles will cover a wide range of subjects both of historical and current interest; descriptions of new processes, or metallurgical and industrial plants, new mineral occurrences, and interesting geological formations, as well as articles intended to supply practical and timely informtion on the problems of the prospector and miner, such as the text of new laws and official regulations and notices affecting the mineral industry.

PRIMARY AND SECONDARY GOLD CONCENTRATIONS.

By Chas. S. Haley.

Concentrations of placer gold may generally be divided into two classes—those that are original and those that result as a secondary concentration of original ones. Under the first head we have primary stream bed erosion. A stream that is wearing down to its basal plane through a mountain range will in the course of many thousand years concentrate and segregate material from pockets and seams, as well as the larger ledges, extending through an enormous mass of ground. Many billions of tons of material may be sorted over by aerial and aqueous action and the residue thereof amounting to anywhere from 2 to 50 per cent of selected portions of the mass will be concentrated in the narrow gorge of the stream.

In the course of this concentration the most of the soluble constituents of the rock mass are removed. Pyrites, galena, and other sulphides are broken down and dissolved by the descending surface waters. Gold associated with these sulphides, being insoluble, simply descends by gravity to the lowest portion of the trough of the channel, in many cases taking ages of time to reach the bottom level. This solvent action is largely assisted by intensive frost conditions and the subsequent heat of the sun. The most insoluble constituents of the rock are clay and quartz, and as a rule these two will be found represented in all types of gravel

Another type of primary concentration is that due to the erosion of a dike in place. Most intrusive dikes upon cooling have been cracked and the cracks have filled with stringers and cross veins running in all directions. If the magma beneath has been gold-bearing, these stringers often carry gold in considerable quantity. As the whole dike mass is planed off by atmospheric and water action, regardless of any one particular stream channel, a concentration will often occur on flats and plateaus which are not far removed from and often directly represent the original source of, the concentrated material. At Fresno, in the United States of Colombia, the writer has seen concentration of this sort from stringers in granite. The gravel consisted of about five feet of sub-angular soft granitic material and sand. Underneath these, torrential rains prevalent in the tropics had softened the granite for

a depth of from eight to ten feet. As a result, in order to recover any of the gold, it was necessary to sluice off the entire bed rock until undecomposed material was reached.

In California one of the best examples of primary concentration is in Holcomb Valley in San Bernardino County. Here a belt of mineralized porphyry extending in an easterly and westerly direction through Gold Mountain has been washed and concentrated along the sides of a comparatively shallow and wide basin.

A third type of primary concentration is exhibited in Alaska in the vast terminal moraines of the Yukon River basin. The gravel as a whole is very spotted and irregular in gold content and is not commercially profitable.

We now come to secondary concentrations, which probably represent the types of gravel commercially exploited in most of the placer mining districts of the present day. In the Sierras of California the system of Cretaceous rivers, which originally concentrated the gold from the metamorphic rocks thrown up by the Sierra uplift, have been crossed and recrossed at right angles by the present Quartenary system of drainage. As a result of this condition, the fabulously rich placers of the early days of California were formed. A single Quartenary stream in a bed not over fifty feet in width in many cases represented the concentration of half a mile of Cretaceous stream bed. Often gravel carrying this gold had been disintegrated and worn by attrition so much that only two or three feet of material needed to be worked in order to obtain the product of thousands of billions of tons of country rock, which had been concentrated and reconcentrated for thousands and even millions of years.

In Colombia, in Venzuela, the Guianas, and also in Ecuador, Peru and Bolivia, to a lesser degree these same conditions of secondary concentration have existed, but for some reason the primary concentrations seem to have produced the greater proportion of the placer gold that has been won from these countries. From the writer's observation, a reason for this is that the Cretaceous and Tertiary channels which have been concentrated by Quartenary streams in a manner analogous to California, have generally had their drainage through territory which was not auriferous.

The transportation and deposition of placer gold are governed by laws which at first glance seem rather complicated, but in analysis of these principles we find that they are quite simple. Streams that are heavily loaded with sand and mud will naturally have greater transporting power than the streams that are clear, their velocity depending largely upon their grade and cross section, and as these two elements vary greatly at short distances in all mountain streams, it is natural that the amount of gold that the stream is capable of carrying at the bottom of its current will vary greatly, causing more or less irregular distribution. Often in the case of streams of intermittent flow of varying magnitude caused by changing conditions, there will be recurrent stratas of gravel, which contain alternate barren areas and concentrations of gold. During the volcanic period this condition was largely emphasized in the Sierras by the frequent showers of ash, mud and detrital material, which at frequent intervals blocked and choked the streams, causing them to abandon and resume certain definite courses at irregular intervals.

As a rule, on the short turn of a river where the bed rock is sloping out toward a gentle curve and where the force of a current is lessened, we will find the greater concentrations of gold; conversely, on the long turns where the outside portion of the current moving at greater velocity has cut into bed rock, we do not find any great concentrations of gold because conditions have not been favorable for its lodging.

Where a rib of hard bed rock crosses a stream, causing a change in its grade, gold does not generally lodge on the upstream side. The force of the current will drag it over the crest of the ridge and deposit it on the downstream slope. Pot holes in rivers that have any considerable grade, as a rule are absolutely barren. Small crevices, with their upper ends pointing upstream, if they run transverse to the direction of the current, will form natural riffles for heavy gold. As a rule, heavy gold does not travel very far from its source. Fine gold travels very readily. This is very clearly evidenced on the American River in California, especially on the middle fork. For many years the short turns and bars formed near the flood-line of the river have been worked and reworked by rockers year after year. The same condition existed at Posepny in Hungary, and notably so on the Snake River in Idaho.

The concentration varies inversely as the distance from the source of the gold, whether primary or secondary. A river system is constantly working toward a grade or basal plane, which is continually being lowered. This tends to deposit values in fine gold lower and lower down the river. A case in point is noted in the deposition of the famous dredge placers of Oroville. Here the bed rock, however, is mostly tuffaceous, and it is quite possible that underneath this bed rock courses of the old Cretaceous rivers at great depth contained richer gravels than those that have been worked above. The difficulties in the way of prospecting and operating this material are such that it is extremely doubtful if it will ever be a commercial proposition to work. Prospecting an area like this is too much like operating a punch board—the amount of money put in is apt to be considerably more than the result is worth.

In general, it may be said that coarse gold as a rule is associated with gravel that contains the heavier constituents of the original rock; whereas fine gold is often and even generally associated with sand, clay, and light material. A case in point was noted by the writer on Portage Creek on the upper reaches of the Little Delta River in Alaska. Portage Creek drains the area of glacial moraines in the basin of the upper Tanana for an area of perhaps 50 square miles. There is no bed rock visible and the stream basins are all in gravel. At the bottom of the Portage Creek drainage there is a streak about six inches in depth lying on what may be termed "an original gravel bed rock," which carries a small amount of heavy gold. Above this streak there are four or five feet of light sand and pebbles. One or two fine colors to the pan is the average run of the upper gravel.

SECRETARY'S OFFICE.

W. W. THAYER, Secretary.

The California State Mining Bureau was created April 16, 1880, by legislative act. In March, 1893, the original act was repealed and an amended act approved and passed by the legislative body. Again on June 16, 1913, a new Mining Bureau Act was approved which became effective August 10, 1913, repealing all former acts, and forming the basic law under which the Bureau now functions.

It is doubtless true that both the mining and lay public have not in the past always recognized the part played by the Bureau in the development of the state's mineral resources. Innumerable inquiries regarding them, originating within and without its borders and in foreign countries, have been answered with ultimate results reflected by a consistent growth in the value of the state's mineral output since the records of production were first compiled by the Bureau in 1887.

It is believed that a better understanding of the economic position occupied by the Bureau will be imparted to the public, whose funds support it, by embodying in the Monthly Chapter a review of the executive activities.

The responsibility for the coördination of effort of each department, to the end that the utmost efficiency may be maintained with the limited and variable appropriations accorded the Bureau by successive legislatures, rests upon the office of Secretary.

Activities referable to that office, such as reports of new maps and publications issued, amount of mail handled, changes and enlargements in offices, changes in personnel of the staff, property and equipment, financial statements, etc., are therefore included herein.

New Publications.

During the month the following Bureau Publications have been made available for distribution:

Summary of Operations, California Oil Fields, October, 1922, Vol. 8, No. 4.

Mining in California, October, 1922, Vol. 18, No. 10.

Distribution of Publications.

The Bureau's publications are constantly in demand, requests for copies coming from all over the United States and foreign countries.

Publications were distributed during the month as follows:

Publications	Number distributed
Report XIV, State Mineralogist	2
Report XV, State Mineralogist	5
Report XVII, State Mineralogist	6
Mines and Mineral Resources of Colusa, etc.	1
Mines and Mineral Resources of Del Norte, etc.	1
Mines and Mineral Resources of Fresno, etc.	6
Mines and Mineral Resources of Imperial, etc.	2
Mines and Mineral Resources of Alpine, etc.	6
Mines and Mineral Resources of Butte, etc.	2
Mines and Mineral Resources of El Dorado, etc.	1
Mines and Mineral Resources of Los Angeles, etc.	4
Mines and Mineral Resources of Monterey	1

Publications	Number distributed
Mines and Mineral Resources of San Bernardino, etc.	2
Mines and Mineral Resources of Nevada County	1
Mines and Mineral Resources of Plumas County	1
Mines and Mineral Resources of Sierra County	1
Bulletin No. 6, California Gold Mill Practices	2
Bulletin No. 37, Gems, Jewelers' Materials, Ornamental Stones of California	11
Bulletin No. 50, Copper Resources of California (Revised)	6
Bulletin No. 72, Geologic Formations of California	22
Bulletin No. 75, United States and California Mining Laws	10
Bulletin No. 76, Manganese and Chromium in California	1
Bulletin No. 78, Quicksilver Resources of California	5
Bulletin No. 85, Platinum Resources of California	6
Bulletin No. 89, Petroleum Resources of California, with special reference to unproved areas	61
Bulletin No. 90, California Mineral Production for 1920, with County Maps	50
Mining in California (Monthly), Vol. 18, No. 10, October, 1922	3000
Mining in California (Monthly), Vol. 18, No. 9, September, 1922	50
Summary of Operations, California Oil Fields (Monthly), Vol. 8, No. 3, September, 1922	3000
County Maps and Registers of Mines	6
Copper Deposits Map	2
Inyo County Geological Map	6
Tuolumne County Mineral Map	2
Geological Map of California, mounted	15
Lake County Map	2
Oil Field Maps	470
Map accompanying Bulletin No. 89	38

Mails and Files.

The Bureau maintains in addition to its correspondence file a mine report file which includes reports on some 7500 mines and mineral properties in California. Also there is available to the public a file of the permits granted to mining and oil corporations by the State Commissioner of Corporations.

During the month 768 letters were received and answered. They are practically all requests for information and the inquiries cover all phases of prospecting, mining and developing mineral deposits, reduction of crude minerals and marketing of refined products.

Drafting.

The Bureau maintains an up-to-date drafting department, where topographic and geological maps, tracings, oil well logs, and oil field maps are prepared.

DIVISION OF MINERALS AND STATISTICS.

STATISTICS, MUSEUM, LABORATORY.

WALTER W. BRADLEY, Statistician and Curator.

STATISTICS.

Estimate of 1922 Output.

The total value of the mineral production of California for the year 1922, just closed, is conservatively estimated to have been approximately $257,351,690. This is, in part, detailed in the tabulation below; but, as there are more than fifty mineral substances on California's commercial list, it is impractical at this early date to obtain definite figures on other than the more important items. The blank report forms have been mailed out to the operators in all mineral lines, and the date of publication of the final and complete report will depend upon the promptness of their replies. The State Mining Bureau urges the hearty cooperation of all concerned, to the end that the results may be made known early.

This estimated total of $257,351,690 is a decrease of $10,805,782 from the 1921 production, due mainly to lower prices prevailing for crude petroleum, and an apparent decrease of nearly a million dollars in the gold yield. Preliminary reports indicate a record yield of approximately 139,000,000 barrels of petroleum; but, as production was considerably in excess of consumption, the prices for all grades dropped accordingly. This resulted in lowering the average price, although the increased yield was of the higher-gravity oils and especially in the later part of the year. We have estimated an average value, at the well, of $1.60 per barrel for the first six months of 1922, and $1.21 per barrel, the second half; the amounts being 61,000,000 barrels and 78,000,000 barrels, respectively, for the two periods. This gives an average of $1.375 per barrel for 1922 as against $1.804 per barrel in 1921. This results in a net decrease of slightly over $12,000,000 in total value.

Though reports from the gold mining districts have, for the most part, been indicative of renewed interest and renewing operations, receipts of bullion at the mint and smelters show a decrease for the year. This was in part due to the Argonaut mine fire, and to a slight decrease in dredge yield. Silver, mainly from the Randsburg district as in 1921, showed a small decrease from the high point of the preceding year. Copper shows an increase to nearly double the 1921 figure, owing to the resumption of shipments by the Walker mine in Plumas County and the continuity of operations by its neighbor, the Engels group. Lead and zinc increased materially, both in quantity and value; as did also quicksilver in a lesser degree.

Magnesite shipments increased about 25 per cent, owing to improvement in the demand for plastic purposes. As the demand for building materials was active during 1922, the structural group (brick, cement, building stone, crushed rock, etc.) showed some increase in value over 1921. There were no notable changes in the general status of the miscellaneous "industrial" group; nor among the salines, except borax. The last-named recovered, in part, from the slump of 1921, and the present market is reported favorable for a continuation of activity.

The estimated quantities and values for 1922 are tabulated as follows:

$14,900,000		gold.
3,200,000	(3,200,000 fine oz.)	silver.
3,035,100	(22,050,000 lb.)	copper.
356,250	(6,250,000 lb.)	lead.
206,340	(3,620,000 lb.)	zinc
217,000	(3,500 flasks)	quicksilver.
58,500	(650 fine oz.)	platinum
191,000,000	(139,000,000 bbl.)	petroleum.
5,250,000	(75,000,000 M. cu. ft.)	natural gas.
629,000	(59,100 tons)	magnesite.
33,000,000		brick, cement, building stone, crushed rock, etc.
2,750,000		miscellaneous "industrial" minerals.
2,750,000		salines (including borax, potash, salt, soda, etc.).
$257,351,690		Total value.

MUSEUM.

The Museum of the State Mining Bureau possesses an exceptionally fine collection of rocks and minerals of both economic and academic value. It ranks among the first five of such collections located in North America; and contains not only one or more samples of most of the known minerals found in California, but many specimens from other states and foreign countries as well.

Aside from those visiting it for its purely educational features, the Museum daily attracts scores of tourists and travelers, and furnishes visual evidence of the well-nigh unlimited mineral resources of California. During the past 30 days a total of 527 visitors signed their names to the Museum register, and in addition there are many others daily who fail to take note of our request for their signatures. It is interesting to note how widely spread are the home localities of these visitors. In addition to nearly every county in California, there were thirty states, Alaska and Hawaii represented, as well as 15 foreign countries. Outside of California, Nevada led with 18 names; followed by Canada and Alaska, 15 each; Washington, 14; Oregon, 13; New York, 12; Ohio, 11; and Alabama, Colorado, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, Oklahoma, Pennsylvania, Rhode Island, South Dakota, Texas, Wisconsin, Wyoming, each showing from one to eight names. The following foreign countries, besides several provinces of Canada (including Alberta, British Columbia, Manitoba, Quebec, Saskatchewan and Yukon), are represented: Australia, Belgium, Costa Rica, Denmark, England, France, Germany, Honduras, Hungary, India, Japan, Java, Russia, San Salvador, South Africa.

Mineral specimens suitable for exhibit purposes are solicited, and their donation will be appreciated by the State Mining Bureau as well as by those who utilize the facilities of the collection. The Bureau supplies a set of forty typical minerals and ores, appropriately labeled, for study purposes to any public school in the state upon request.

Among the specimens received recently, and catalogued for the Museum, are the following:

19750. *Dolomite*, high grade. From San Benito County, by C. L. Votaw, San Francisco.

19751. *Chrysotile Asbestos* (hydrous magnesium silicate, fibrous serpentine). From Meikle Mine, on Coffee Creek, 2 miles north of Carrville, Trinity County, Cal., by Geo. M. Nelson, San Francisco.

19753. *Mica* (Muscovite, aluminum-potassium orthosilicate). From Peteca, Rio Arriba County, New Mexico, by Geo. M. Nelson, San Francisco.

19754. *Quartz* (silicon dioxide). Crystal. From 88′ level stope, Bunker Hill Mine, Amador City Amador County, Cal.

19755 to 19761, Inc. *Tetrahedrite* (copper-antimony sulphide approaching Tennantite, on account of high arsenic content. Fine, large crystals; *Quartz* (silicon dioxide, crystals with *Chalcopyrite* (copper-iron sulphide); *Chalcopyrite* (copper-iron sulphide) 2 Fcs. Crystals; Pyrite, Chalcopyrite, Quartz, and Dolomite, showing successive deposition in order named; *Bornite* (copper-iron sulphide); *Galena* (lead sulphide) silver-bearing; *Pyrite* (iron disulphide, crystals, with Dolomite). From Morococha Mine, of Cerro de Fasco Mining Co., Cerro de Pasco, Peru, by Thomas A. Gill, Grass Valley, Cal.

19762. *Carnotite* (hydrous potassium, uranium, vanadium oxide). Massive. An unusually fine, high-grade specimen. From Copper Prince Mine, Roc Creek, Montrose Co., Colorado, by Ernest Schernikow, San Francisco.

19763. *Topaz* (aluminum fluo-silicate). From near Ramona, San Diego County, Cal., by Ernest Schernikow, San Francisco.

19764. *Copper, native.* From Arizona, by Ernest Schernikow, San Francisco.

19766 to 19780 Inc. Lignite *Coal.* Vein ranges from 2′ to 11′ thick between clay beds. Stated to give good results as powdered fuel; *No. 10 Clay.* White-burning; used in terra cotta bodies, face brick, garden terra cotta, flue lining etc.; "Red Bone" *Clay.* A 'bastard fire-clay' somewhat iron-stained, but quite refractory. Used in 'saggers' (clay pans in which potters burn wares to protect them from direct flames in kilns), also mixed with other clays in making sewer pipe; "Pink Mottle *Clay*" red-burning. Used for sewer pipe, roofing tile, hollow tile, and in mixes of vitreous brick, paving, face and rug brick, et al.; "E 101 China *Clay.*" A fine-grained china clay, is obtained by washing, suitable for sanitary and porcelain wares. Also used as component of stoneware bodies, art pottery and novelty wares; "Yellow Owl Cut" *Clay.* Buff or red burning. Suitable for face or rug brick mixtures, hollow tile, roofing tile etc.; "Select West Blue" *Clay.* Cream or buff burning. Used for face brick, rug brick, terra cotta, ladle brick, roofing and hollow tile, etc.; "Red Mottle" *Clay.* Red-burning. For roofing and hollow tile, etc.; "Main Tunnel" Fire *Clay.* Refractory, sandy; used for fire brick, locomotive blocks and refractories; "SH4 Ball *Clay.*" Very plastic, white-burning. Used in chinaware and porcelain mixes, china, insulators, etc.; "SH3" *Clay.* White-burning. Suitable for terra cotta, faience tile body, face brick garden pottery, etc.; "Extra Select Main Tunnel" *Clay.* A refractory fire-clay. Used for high-grade fire brick, also saggers, face brick, etc.; "Hill Blue" *Clay.* One of most useful. Used for faience tile body, terra cotta, garden and art pottery, stoneware, face brick, etc.; "West Tunnel Blue" *Clay.* Used for sewer pipe, hollow tile, etc.; "Hard Bone" *Clay.* A highly-aluminous fire-clay. Used for high-grade and extremely refractory fire-brick. From Alberhill, Cal., by Alberhill Coal & Clay Co., Alberhill, Cal.

19781. Placer *Gold.* From Magalia, Butte County, Cal. by Highland Chief Mine, Carl A. Phelps, Manager, Magalia, Cal.

LABORATORY.

FRANK SANBORN, Petrologist.

During the thirty-day period covered by this report, 211 samples were received and determined.

A list of those of possible commercial value, judged from the sample submitted only, is appended.

The Bureau will supply the name and address of the party who sent in any of the samples listed, upon request, if the reference number is given.

15–1 Iceland spar.
15–2 Talc-schist.
15–3 Copper ore; some silver and gold present.
15–4 Quartz containing lead vanadate; some silver present
15–5 Clay; alumina content fairly high.
15–6 Limonite; (paint pigment).
15–7 Gold-silver ore; contains pyrite and galena.
15–8 Quartz crystal.
15–9 Gypsum.
15–10 Silicified clay; burns white.
15–11 Lazulite.
15–12 Magnesite.
15–13 Massive garnet.
15–14 Highly kaolinized rock; (white-burning clay).

LIBRARY.

E. Cooney, Librarian.

In addition to the numerous standard works, authoritative information on many phases of the mining and mineral industry is constantly being issued in the form of reports and bulletins by various government agencies.

The library of the State Mining Bureau contains some five thousand selected volumes on mines, mining and allied subjects, and it is also a repository for reports and bulletins of the technical departments of federal and state governments and of educational institutions, both domestic and foreign.

It is not the dearth of the latter publications, but rather a lack of knowledge of just what has been published and where the reports may be consulted or obtained, that embarrasses the ordinary person seeking specific information.

To assist in making the public acquainted with this valuable source of current technical information, 'Mining in California' contains under this heading a list of all books and official reports and bulletins received during the month, with names of publishers or issuing departments.

Files of all the leading technical journals will be found in the library, and county and state maps, topographical sheets and geological folios. Current copies of local newspapers published in the mining centers of the state are available for reference.

The library and reading room are open to the public during the usual office hours, when the librarian may be freely called upon for all necessary assistance.

OFFICIAL PUBLICATIONS RECEIVED.

Governmental.

U. S. Geological Survey:

Bulletin No. 708. High Grade Clays of the Eastern United States, with Notes on Some Western Clays. By H. Ries, W. S. Bayley and others.

Bulletin No. 709-N. Primary Traverse in South Carolina 1917–1919. By C. H. Birdseye, Chief Topographic Engineer.

Bulletin No. 709-O. Triangulation in New Mexico and Texas, 1915–1917. By C. H. Birdseye, Chief Topographic Engineer.

Bulletin No. 109-P. Triangulation in Wyoming and Colorado, 1916–1919. By C. H. Birdseye, Chief Topographic Engineer.

Bulletin No. 709-Q. Triangulation and Primary Traverse in Texas, 1916–1920. By C. H. Birdseye, Chief Topographic Engineer.

Bulletin No. 709-R. Triangulation and Primary Traverse in North Carolina. By C. H. Birdseye, Chief Topographic Engineer.

Bulletin No. 730-D. Physiographic Provinces and Sections in Western Oklahoma and Adjacent Parts of Texas. By Nevin M. Fenneman.

Bulletin No. 733. Geology of the Yerk Tin Deposits, Alaska. By Edward Steidtmann and S. H. Cathcart.

Bulletin No. 735-G. General Features of the Magnetite Ores of Western North Carolina and Eastern Tennessee. By W. S. Bayley.

Bulletin No. 735-H. Peridotite Dikes in Scott County, Arkansas. By Hugh D. Miser and Clarence S. Ross.

Bulletin No. 736-G. The Brooks, Steen, and Grand Saline Salt Domes Smith and Van Zandt counties, Texas. By Sidney Powers and Oliver B. Hopkins.

Bulletin No. 742. Chromite of Kenai Peninsula, Alaska. By A. C. Gill.

Bulletin No. 739-D. The Occurrence of Metalliferous Deposits in the Yukon and Kuskokwim Regions, Alaska. By J. B. Merite, Jr.

Mineral Resources:

Gold, Silver, Copper and Lead in South Dakota and Wyoming in 1921. By C. W. Henderson.

Manufactured Gas and By-Products in 1920. By R. S. McBride.

Sulphur and Pyrites in 1921. By H. A. C. Jenisen and H. M. Meyer.

Cement in 1921. By Belle W. Bagley.

Sand and Gravel in 1921. By L. M. Beach.

Lime in 1921. By G. F. Loughlin and A. T. Coons.

Gold, Silver, Copper, Lead and Zinc in Arizona in 1921. By V. C. Heikes.

Water Supply Paper 473. Surface Water Supply of the United States, 1918. Part III—Ohio River Basin. By Nathan C. Grover, Albert H. Horton and C. G. Paulsen.

Water Supply Paper 507. Surface Water Supply of the United States, 1919–1920. Part VII—Lower Mississippi River Basin. By Nathan C. Grover, C.H.E., Robert Follansbee and R. C. Rice, D.E.

Professional Paper 124. The Inorganic Constituents of Marine Invertebrates. By Frank Wigglesworth Clarke and Walter Calhoun Wheeler.

Professional Paper 131-C. The Shapes of Beach Pebbles. By Chester K. Wentworth.

Professional Paper 131-E. Preliminary Report on Fossil Vertebrates of the San Pedro Valley, Arizona, with Descriptions of New Species of Rodentia and Lagemorphia. By James W. Gridley.

Technologic Papers of the Bureau of Standards:

No. 216. Properties of Electrical Insulating Materials of the Laminated Phenol-Methylene Type. By J. H. Deelinger, Physicist, and J. L. Preston, Physicist, B.S.

No. 219. Effect of Temperature, Deformation, and Rate of Loading on the Tensile Properties of Low-Carbon Steel Below the Thermal Critical Range. By H. J. French, Physicist, B.S.

No. 221. Magnetic Susceptibility and Iron Content of Cast Red Brass. By L. H. Marchall, Research Associate, and R. L. Sanford, Physicist, B.S.

No. 446. Spectrophotoelectrical Sensitivity of Argentite. By W. W. Coblentz, Physicist, B.S.

No. 448. Decarburization of Ferrochromium by Hydrogen. By Louis Jordan, Chemist, and F. E. Swindells, Assistant Chemist, B.S.:

U. S. Bureau of Mines Reports of Investigations:

Serial No. 2410. Contraction and Shrinkage of Nonferrous Alloys as Related to Casting Practice. By Robert J. Anderson, Metallurgist, B.M.

Serial No. 2411. Arc Regulation in Electric Furnaces and Pilot Light Control. By C. E. Sims, Electrometallurgist, Northwest Experiment Station, U.S.B.M., in Cooperation with University of Washington.

Serial No. 2412. Comparative Steaming Tests of Nenana Lignite and Matanuska Bituminous Coals. By John A. Davis, Superintendent, and Paul Hopkins, Chemist, Alaska Experiment Station, U.S.B.M.

Serial No. 2413. Bureau of Mines Investigates Gold in Oil Shales and Its Possible Recovery. By Thomas Varley, Superintendent, Intermountain Station, U.S.B.M.

Serial No. 2414. Explosives Used in September, 1922. By W. W. Adams, Statistician, U.S.B.M.

Serial No. 2415. Distillation Gases Yielded by Trent Amalgams and Ethylene Found Therein as a Source of Alcohol. By J. D. Davis, Research Chemist, Pittsburgh Experiment Station, U.S.B.M.

Serial No. 2416. Properties of Typical Crude Oils From the Producing Fields of Southern Louisiana and Southern Texas. By N. A. C. Smith, Petroleum Chemist, B.M., A. D. Bauer, Assistant Petroleum Chemist, B.M., and N. F. LeJeune, Assistant Chemist, B.M.

Serial No. 2417. The Production of Carbon-Black From Natural Gas by the High Voltage Arc. By J. J. Jakowsky, Asst. Ref. Engineer, Pittsburgh Experiment Station, U.S.B.M.

Serial No. 2418. Fatalities at Coal Mines in October, 1922. By W. W. Adams, Statistician, B.M.

Bulletin No. 167. Coal Dust Explosion Tests in the Experimental Mine, 1913 to 1918, Inclusive. By George S. Rice, L. M. Jones, W. L. Egy and H. P. Greenwald.

Technical Paper No. 318. Coke Oven Accidents in the United States During the Calendar Year 1921. By William W. Adams.

Technical Paper No. 308. Analyses of Kentucky Coals.

Technical Paper No. 265. Mesothorium. By Herman Schlundt.

Twelfth Annual Report of the Director of the Bureau of Mines, 1922.

Annual Report of the Director of the Mint for 1922.

Annual Report of the U. S. National Museum, 1922.

U. S. Department of Agriculture. Soil Survey of Nicholas County, West Virginia. By S. W. Phillips.

Kentucky Geological Survey Series VI, Vol. VII—Mississippian Series of Eastern Kentucky. By Charles Butts.

North Carolina Geological and Economic Survey—Economic Paper No. 53—Water Power Survey of Surry and Wilkes Counties. By Thorndike Saville.

Eleventh Biennial Report of the State Geologist of Wyoming.

Canada Department of Mines, Geological Survey, Summary Report 1921, Parts A, D, E.

Memoir 130. Geology and Mineral Deposits of the Bridge River Map-area, British Columbia. By W. S. McCann.

Republic Argentinia. Anales del Ministerio de Agricultura de la Nacion, Seccion Geologia, Mineralogia y Mineria Tomo XVI, No. 1. E. Nevado de Famatina, Dr. Guillermo Bodenbender.

Boletin No. 5. Sumario.

Boletin No. 31. Series B (Geologia) Informe Sobre Estudios Geologico Economicos Eu la Provincia de Catamarca. Por el Dr. Roberto Beder.

Boletin No. 32. Series B (Geologia) La Cuenca de Marayes. Por el Dr. Juan Rasmuss.

Secretaria de Industria Comercio y Trabajo Boletin Minero Organo del Departmento de Minas. Tomo XIII, Numero 6, June, 1922. Mexico.

Societies and Educational Institutions.

Journal of the Mineralogical Society of America, November, 1922.

Bulletin of the Institution of Mining and Metallurgy, November, 1922.

The Philippine Journal of Science, November, 1922.

Mining and Metallurgy, December, 1922.

Proceedings of the Engineers' Society of Western Pennsylvania, October, 1922.

Transactions and Proceedings of the Royal Society of South Australia, Vol. XLV.

The Journal of Geology, November and December, 1922.
Economic Geology, December, 1922.
Monthly Bulletin of the Canadian Institute of Mining and Metallurgy, January, 1923.
The Geographical Review, January, 1923.
The Mining Congress Journal, January, 1923.
Bulletin of the American Petroleum Institute.

Maps.

U. S. G. S. Topographical Sheets:
Chaney Ranch, Fresno County, Quadrangle.
Tuft's Ranch, Fresno County, Quadrangle.
Parks Bar Quadrangle.

Current Magazines on File.

For the convenience of persons wishing to consult the technical magazines in the reading room, a list of those on file is appended:

Architect and Engineer, San Francisco.
Arizona Mining Journal, Phoenix, Arizona.
Asbestos, Philadelphia, Pennsylvania.
American Petroleum Institute, New York.
Brick and Clay Record, Chicago.
Chemical Engineering and Mining Review, London, England.
Cement, Mill and Quarry, Chicago, Illinois.
Engineering and Mining Journal-Press, New York.
Financial Insurance News, Los Angeles, California.
Hercules Mixer, Washington, Delaware.
Journal of Electricity and Western Industry, San Francisco.
Metallurgical and Chemical Engineering, New York.
Mining and Oil Bulletin, Los Angeles.
Mining and Engineering Record, Vancouver, B. C.
Oildom, New York.
Oil Weekly, Houston, Texas.
Oil and Gas Journal, Tulsa, Oklahoma.
Oil, Paint and Drug Reporter, New York.
Oil Trade Journal, New York.
Oil Age, Los Angeles.
Oil News, Galesburg, Illinois.
Petroleum Record, Los Angeles.
Petroleum Refiner, Kansas City, Missouri.
Petroleum Age, New York.
Petroleum World, Los Angeles.
Queensland Government Mining Journal, Brisbane, Australia.
Rock Products, Chicago, Illinois.
Southwest Builder and Contractor, Los Angeles.
Stone, New York.
Salt Lake Mining Review, Salt Lake City, Utah.
Standard Oil Bulletin, San Francisco.
Safety News, Industrial Accident Commission, San Francisco.
The Record, Associated Oil Company, San Francisco.

Newspapers.

The following papers are received and kept on file in the library:

Amador Dispatch, Jackson, Cal.
Arkansas Oil and Mineral News, Hot Springs National Park (Arkansas).
Bakersfield Morning Echo, Bakersfield, Cal.
Blythe Herald, Blythe, Cal.
Bridgeport-Chronicle-Union, Bridgeport, Mono Co., Cal.
California Oil World, Los Angeles, Cal.
Colusa Daily Sun, Colusa, Cal.
Daily Midway Driller, Taft, Cal.
Del Norte Triplicate, Crescent City, Cal.

Exeter Sun, Exeter, Cal.
Georgetown Gazette, Georgetown, Cal.
Gateway Gazette, Beaumont, Cal.
Gilroy Gazette, Gilroy, Cal.
Goldfield News, Goldfield, Nevada.
Guerneville Times, Guerneville, Cal.
Humboldt Standard, Eureka, Cal.
Healdsburg Enterprise, Healdsburg, Cal.
Inyo Independent, Independence, Cal.
Inyo Register, Bishop, Cal.
Lake County Bee, Lakeport, Cal.
Mariposa Gazette, Mariposa, Cal.
Mining and Financial Record, Denver, Colo.
Mountain Democrat, Placerville, Cal.
Mountain Messenger, Downieville, Cal.
Nevada Mining Press, Reno, Nevada.
Oroville Daily Register, Oroville, Cal.
Oatman Mining Press, Oatman, Arizona.
Oregon Observer, Grants Pass, Oregon.
Petroleum Reporter, Etna Mills, Cal.
Plumas Independent, Quincy, Cal.
Plumas National Bulletin, Quincy, Cal.
Placer Herald, Auburn, Cal.
Sacramento Union, Sacramento, Cal.
San Diego News, San Diego, Cal.
Santa Barbara Daily News, Santa Barbara, Cal.
Shasta Courier, Redding, Cal.
Siskiyou News, Yreka, Cal.
Siskiyou Standard, Fort Jones, Cal.
Stockton Record, Stockton, Cal.
Sunset Journal, Sunset District, San Francisco, Cal.
Tuolumne Prospector, Tuolumne, Cal.
Ventura Daily Post, Ventura, Cal.
Weekly Trinity Journal, Weaverville, Cal.
Western Sentinel, Etna Mills, Cal.

PRODUCERS AND CONSUMERS.

The producer and consumer of mineral products are mutually dependent upon each other for their prosperity, and one of the most direct aids rendered by the Bureau to the mining industry in the past has been that of bringing producers and consumers into direct touch with each other.

This work has been carried on largely by correspondence, supplemented by personal consultation. Lists of consumers of all the commercial minerals produced in California have been made available to producers upon request, and likewise the owners of undeveloped deposits of various minerals, and producers of them, have been made known to those looking for raw mineral products.

Sufficient publicity has not heretofore been given to this feature of the Bureau's work, but in 'Mining in California' a suitable medium is provided for current inquiries of this nature, and, therefore, written or verbal inquiries that come to the attention of the Bureau are summarized in each issue.

The name of the product wanted or offered, only, is published; the name of the owner of the deposit, or buyer, and other details being supplied upon request.

In writing, the reference number of the item should be given.

Mineral Products or Deposits for Sale.

12–1 Graphite deposit.
12–2 Large gold property; or will lease.
12–3 Mica; average size sheets 2″ x 2½″.
12–4 Clear quartz crystals.
12–5 Montmorillonite (rock soap); 500 feet to railroad.
12–6 Colemanite; five miles from Shoshone.
12–7 Fluorspar; can furnish large quantity.
12–8 Magnesite.
12–9 Manganese ore.
12–10 Strontianite.
12–11 Arsenical iron oxide; high in arsenic.
12–12 Potash feldspar (orthoclase).
12–13 Large deposit of arsenic.

Mineral Products or Deposits Wanted.

13–1 Arsenical ore; tonnage.
13–2 Gold mine; placer or quartz that can be developed on a rather large scale.
13–3 Bentonite (rock soap).
13–4 Earth colors; green, blue, yellow, orange, purple, etc.; tonnage.
13–5 Molybdenum; 85% MoS_2; 25 tons per month.
13–6 Beryl mineral (not gem quality), 25 tons or over per month.
13–7 Lithia ores; 100-ton lots. Amblygonite 8–9% LiO_2; Spodumene 6–7%; Lepidolite 4–5%.
13–8 Molybdenum; deposit or tonnage.
13–9 Manganese; deposit or tonnage.
13–10 Arsenic; deposit or tonnage.
13–11 Quicksilver; deposit or tonnage.
13–12 Bismuth; deposit or tonnage.
13–13 Tungsten; deposit or tonnage.
13–14 Lump pumice; 1″ to 1½″ lumps and up; tonnage.

EMPLOYMENT SERVICE.

Following close upon the establishment of the Mining Division branch offices in 1919, a free technical employment service was offered as a mutual aid to mine operators and technical men for the general benefit of the mineral industry.

Briefly summarized, men desiring positions are registered, the cards containing an outline of the applicant's qualifications, position wanted, salary desired, etc., and as notices of 'positions open' are received, the names and addresses of all applicants deemed qualified are sent to the prospective employer for direct negotiations.

Telephone and telegraphic communications are also given immediate attention.

The Bureau contemplates registering technical men, or those qualified for supervisory positions, and vacancies of like nature, only, as no attempt will be made to supply common mine and mill labor.

A list of applicants for positions and 'positions open,' received by the Bureau during each 30-day period preceding the date of publication of the Monthly Chapter is carried in each issue.

Each notice is designated by a key number, and communications sent to the Bureau in reply to any notice will be forwarded to the proper party without delay or charge of any kind. If desired, recommendations may be filed with an application, but copies only should be sent to the Bureau, to avoid possible loss.

Registration cards for the use of both prospective employers and employees may be obtained at any office of the Bureau upon request, and a cordial invitation is extended to the industry to make free use of the facilities afforded.

POSITIONS WANTED.

11-1 Assayer. Technical course completed. Age 29; single. References. Salary wanted $125.

11-2 Manager or Superintendent. Reads, writes and speaks Spanish fluently. Age 42; married. References. Salary wanted $300 minimum.

11-3 Junior Mining Engineer or Geologist. Technical graduate. Two years experience. Age 24; single. Reference. Salary wanted $150 minimum.

11-4 Accounting—office work. Sixteen years experience as chief accountant and auditor. Age 57; single. References. Salary wanted $150-$175.

During the month one opening was brought to the attention of qualified applicants.

PUBLICATIONS OF THE CALIFORNIA STATE MINING BUREAU.

During the past forty-two years, in carrying out the provisions of the organic act creating the California State Mining Bureau, there have been published many reports, bulletins and maps which go to make up a library of detailed information on the mineral industry of the state, a large part of which could not be duplicated from any other source.

One feature that has added to the popularity of the publications is that many of them have been distributed without cost to the public, and even the more elaborate ones have been sold at a price which barely covers the cost of printing.

Owing to the fact that funds for the advancing of the work of this department have often been limited, many of the reports and bulletins mentioned were printed in limited editions which are now entirely exhausted.

Copies of such publications are available, however, in the Bureau's offices in the Ferry Building, San Francisco; Pacific Finance Building, Los Angeles; in Santa Maria; Santa Paula; Coalinga; Taft; Bakersfield; Auburn, and Redding. They may also be found in many public, private and technical libraries in California and other states, and foreign countries.

A catalog of all publications of the Bureau, from 1880 to 1917, giving a synopsis of their contents, is issued as Bulletin No. 77.

Publications in stock may be obtained by addressing any of the offices of the State Mining Bureau and enclosing the requisite amount in the case of publications that have a list price. The Bureau is authorized to receive only coin, stamps or money orders, and it will be appreciated if remittance is made in this manner rather than by personal check.

The prices noted include delivery charges to all parts of the United States. Money orders should be made payable to the State Mining Bureau.

REPORTS.

Asterisks (**) indicate the publication is out of print.

	Price
**First Annual Report of the State Mineralogist, 1880, 43 pp. Henry G. Hanks	----
**Second Annual Report of the State Mineralogist, 1882, 514 pp., 4 illustrations, 1 map. Henry G. Hanks	----
**Third Annual Report of the State Mineralogist, 1883, 111 pp., 21 illustrations. Henry G. Hanks	----
**Fourth Annual Report of the State Mineralogist, 1884, 410 pp., 7 illustrations. Henry G. Hanks	----
**Fifth Annual Report of the State Mineralogist, 1885, 234 pp., 15 illustrations, 1 geological map. Henry G. Hanks	----
**Sixth Annual Report of the State Mineralogist, Part I, 1886, 145 pp., 3 illustrations, 1 map. By Henry G. Hanks	----
**Part II, 1887, 222 pp., 36 illustrations. William Irelan, Jr.	----
**Seventh Annual Report of the State Mineralogist, 1887, 315 pp. William Irelan, Jr.	----
**Eighth Annual Report of the State Mineralogist, 1888, 948 pp., 122 illustrations. William Irelan, Jr.	----
**Ninth Annual Report of the State Mineralogist, 1889, 352 pp., 57 illustrations, 2 maps. William Irelan, Jr.	----
**Tenth Annual Report of the State Mineralogist, 1890, 983 pp., 179 illustrations, 10 maps. William Irelan, Jr.	----
Eleventh Report (First Biennial) of the State Mineralogist, for the two years ending September 15, 1892, 612 pp., 73 illustrations, 4 maps. William Irelan, Jr.	$1.00
**Twelfth Report (Second Biennial) of the State Mineralogist, for the two years ending September 15, 1894, 541 pp., 101 illustrations, 5 maps. J. J. Crawford	----
**Thirteenth Report (Third Biennial) of the State Mineralogist, for the two years ending September 15, 1896, 726 pp., 93 illustrations, 1 map. J. J. Crawford	----
Chapters of the State Mineralogist's Report, Biennial Period, 1913-1914, Fletcher Hamilton:	
**Mines and Mineral Resources, Amador, Calaveras and Tuolumne Counties, 172 pp., paper	----
Mines and Mineral Resources, Colusa, Glenn, Lake, Marin, Napa, Solano, Sonoma and Yolo Counties, 208 pp., paper	.50
Mines and Mineral Resources, Del Norte, Humboldt, and Mendocino Counties, 59 pp., paper	.25
Mines and Mineral Resources, Fresno, Kern, Kings, Madera, Mariposa, Merced, San Joaquin and Stanislaus Counties, 220 pp., paper	.50
Mines and Mineral Resources of Imperial and San Diego Counties, 113 pp., paper	.35
**Mines and Mineral Resources, Shasta, Siskiyou and Trinity Counties, 180 pp., paper	----
Fourteenth Report of the State Mineralogist, for the Biennial Period 1913-1914, Fletcher Hamilton, 1915:	
A General Report on the Mines and Mineral Resources of Amador, Calaveras, Tuolumne, Colusa, Glenn, Lake, Marin, Napa, Solano, Sonoma, Yolo, Del Norte, Humboldt, Mendocino, Fresno, Kern, Kings, Madera, Mariposa, Merced, San Joaquin, Stanislaus, San Diego, Imperial, Shasta, Siskiyou, and Trinity Counties, 974 pp., 275 illustrations, cloth	$2.00
Chapters of the State Mineralogist's Report, Biennial Period, 1915-1916, Fletcher Hamilton:	
Mines and Mineral Resources, Alpine, Inyo and Mono Counties, 176 pp., paper	.65
Same, including geological map of Inyo County	1.25
Mines and Mineral Resources, Butte, Lassen, Modoc, Sutter, and Tehama Counties, 91 pp., paper	.50
Mines and Mineral Resources, El Dorado, Placer, Sacramento, and Yuba Counties, 198 pp., paper	.65

REPORTS—Continued.

Asterisks (**) indicate the publication is out of print.

	Price
Mines and Mineral Resources, Los Angeles, Orange, and Riverside Counties, 136 pp., paper	$0.50
Mines and Mineral Resources, Monterey, San Benito, San Luis Obispo, Santa Barbara, and Ventura Counties, 183 pp., paper	.65
Mines and Mineral Resources, San Bernardino and Tulare Counties, 186 pp., paper	.65
Fifteenth Report of the State Mineralogist, for the Biennial Period 1915-1916, Fletcher Hamilton, 1917:	
A general Report on the Mines and Mineral Resources of Alpine, Inyo, Mono, Butte, Lassen, Modoc, Sutter, Tehama, Placer, Sacramento, Yuba, Los Angeles, Orange, Riverside: San Benito, San Luis Obispo, Santa Barbara, Ventura, San Bernardino and Tulare Counties, 990 pp., 413 illustrations, cloth	3.75
Chapters of the State Mineralogist's Report, Biennial Period 1917-1918, Fletcher Hamilton:	
Mines and Mineral Resources of Nevada County, 270 pp., paper	.75
Mines and Mineral Resources of Plumas County, 188 pp., paper	.50
Mines and Mineral Resources of Sierra County, 144 pp., paper	.50
Seventeenth Report of the State Mineralogist, 1920, Mining in California During 1920, Fletcher Hamilton; 562 pp., 71 illustrations, cloth	1.75
Eighteenth Report of the State Mineralogist, 1922, Mining in California, Fletcher Hamilton. Chapters published monthly beginning with January, 1922:	
**January, **February, March, April, May, June, July, August, September, October, November, December, 1922	Free
Chapters of State Oil and Gas Supervisor's Report:	
Summary of Operations—California Oil Fields, July, 1918, to March, 1919 (one volume)	Free
Summary of Operations—California Oil Fields. Published monthly, beginning April, 1919:	
**April, **May, June, **July, **August, **September, **October, November, December, 1919	Free
January, February, March, April, May, June, July, **August, September, October, November, December, 1920	Free
January, February, March, April, May, June, **July, August, **September, **October, **November, December, 1921	Free
January, February, March, April, May, June, July, August, September, October, November, December, 1922	Free

BULLETINS.

	Price
**Bulletin No. 1. A Description of Some Desiccated Human Remains, by Winslow Anderson. 1888, 41 pp., 6 illustrations	----
**Bulletin No. 2. Methods of Mine Timbering, by W. H. Storms. 1894, 58 pp., 75 illustrations	----
**Bulletin No. 3. Gas and Petroleum Yielding Formations of Central Valley of California, by W. L. Watts. 1894, 100 pp., 13 illustrations, 4 maps	----
**Bulletin No. 4. Catalogue of Californian Fossils, by J. G. Cooper, 1894, 73 pp., 67 illustrations. (Part I was published in the Seventh Annual Report of the State Mineralogist, 1887.)	----
**Bulletin No. 5. The Cyanide Process, 1894, by Dr. A. Scheidel. 140 pp., 46 illustrations	----
Bulletin No. 6. California Gold Mill Practices, 1895, by E. B. Preston, 85 pp., 46 illustrations	.50
**Bulletin No. 7. Mineral Production of California, by Counties for the year 1894, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 8. Mineral Production of California, by Counties for the year 1895, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 9. Mine Drainage, pumps, etc., by Hans C. Behr. 1896, 210 pp., 206 illustrations	----

BULLETINS—Continued.

Asterisks (**) indicate the publication is out of print.

	Price
**Bulletin No. 10. A bibliography Relating to the Geology, Palæntology and Mineral Resources of California, by Anthony W. Vogdes. 1896, 121 pp.	----
**Bulletin No. 11. Oil and Gas Yielding Formations of Los Angeles, Ventura and Santa Barbara counties, by W. L. Watts. 1897, 94 pp., 6 maps, 31 illustrations	----
**Bulletin No. 12. Mineral Production of California, by Counties for 1896, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 13. Mineral Production of California, by Counties for 1897, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 14. Mineral Production of California, by Counties for 1898, by Charles G. Yale	----
**Bulletin No. 15. Map of Oil City Fields, Fresno County, by John H. Means. 1899.	----
**Bulletin No. 16. The Genesis of Petroleum and Asphaltum in California, by A. S. Cooper. 1899, 39 pp., 29 illustrations	----
**Bulletin No. 17. Mineral Production of California, by Counties for 1899, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 18. Mother Lode Region of California, by W. H. Storms. 1900, 154 pp., 49 illustrations	----
**Bulletin No. 19. Oil and Gas Yielding Formations of California, by W. L. Watts. 1900, 236 pp., 60 illustrations, 8 maps	----
**Bulletin No. 20. Synopsis of General Report of State Mining Bureau, by W. L. Watts. 1901, 21 pp. This bulletin contains a brief statement of the progress of the mineral industry in California for the four years ending December, 1899	----
**Bulletin No. 21. Mineral Production of California by Counties, by Charles G. Yale. 1900. Tabulated sheet	----
**Bulletin No. 22. Mineral Production of California for Fourteen Years, by Charles G. Yale. 1900. Tabulated sheet	----
Bulletin No. 23. The Copper Resources of California, by P. C. DuBois, F. M. Anderson, J. H. Tibbits and G. A. Tweedy. 1902, 282 pp., 69 illustrations, and 9 maps	$0.50
**Bulletin No. 24. The Saline Deposits of California, by G. E. Bailey. 1902, 216 pp., 99 illustrations, 5 maps	----
**Bulletin No. 25. Mineral Production of California, by Counties, for 1901, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 26. Mineral Production of California for the past Fifteen Years, by Charles G. Yale. 1902. Tabulated sheet	----
**Bulletin No. 27. The Quicksilver Resources of California, by William Forstner. 1903, 273 pp., 144 illustrations, 8 maps	----
**Bulletin No. 28. Mineral Production of California, for 1902, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 29. Mineral Production of California for Sixteen Years, by Charles G. Yale. 1903. Tabulated sheet	----
**Bulletin No. 30. Bibliography Relating to the Geology, Palæntology, and Mineral Resources of California, by A. W. Vogdes. 1903. 290 pp.	----
**Bulletin No. 31. Chemical Analyses of California Petroleum, by H. N. Cooper. 1904. Tabulated sheet	----
**Bulletin No. 32. Production and Use of Petroleum in California, by Paul W. Prutzman. 1904, 230 pp., 116 illustrations, 14 maps	----
**Bulletin No. 33. Mineral Production of California, by Counties, for 1903, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 34. Mineral Production of California for Seventeen Years, by Charles G. Yale. 1904. Tabulated sheet	----
**Bulletin No. 35. Mines and Minerals of California, by Charles G. Yale. 1904, 55 pp., 20 county maps. Relief map of California	----
**Bulletin No. 36. Gold Dredging in California, by J. E. Doolittle. 1905, 120 pp., 66 illustrations, 3 maps	----
Bulletin No. 37. Gems, Jewelers' Materials, and Ornamental Stones of California, by George F. Kuntz. 1905, 168 pp., 54 illustrations	.25

BULLETINS—Continued.

Asterisks (**) indicate the publication is out of print.

	Price
**Bulletin No. 38. Structural and Industrial Materials of California, by Wm. Forstner, T. C. Hopkins, C. Naramore and L. H. Eddy. 1906, 412 pp., 150 illustrations, 1 map	----
**Bulletin No. 39. Mineral Production of California, by Counties, for 1904, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 40. Mineral Production of California for Eighteen Years, by Charles G. Yale. 1905. Tabulated sheet	----
**Bulletin No. 41. Mines and Minerals of California, for 1904, by Charles G. Yale. 1905, 54 pp., 20 county maps	----
**Bulletin No. 42. Mineral Production of California, by Counties, 1905, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 43. Mineral Production of California for Nineteen Years, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 44. California Mines and Minerals for 1905, by Charles G. Yale. 1907, 31 pp., 20 county maps	----
**Bulletin No. 45. Auriferous Black Sands of California, by J. A. Edman. 1907, 10 pp.	----
Bulletin No. 46. General Index of Publications of the California State Mining Bureau, by Charles G. Yale. 1907, 54 pp.	$0.30
**Bulletin No. 47. Mineral Production of California, by Counties, 1906, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 48. Mineral Production of California for Twenty Years, 1906, by Charles G. Yale	----
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**Bulletin No. 71. Mineral Production for 1915, with County Maps and Mining Laws, by Walter W. Bradley. 193 pp., 4 illustrations	----
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**Bulletin No. 73. First Annual Report of the State Oil and Gas Supervisor of California, for the fiscal year 1915-16, by R. P. McLaughlin. 278 pp., 26 illustrations	----
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Bulletin No. 89. Petroleum Resources of California, with Special Reference to Unproved Areas, by Lawrence Vander Leck, 1921. 12 figures, 6 photographs, 6 maps in pocket, 186 pp., cloth	$1.25
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**Preliminary Report No. 2. Notes on Damage by Water in California Oil Fields, March, 1914. By R. P. McLaughlin. 4 pp.	----
**Preliminary Report No. 3. Manganese and Chromium, 1917. By E. S. Boalich. 32 pp.	----
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Preliminary Report No. 6. A Review of Mining in California During 1919. Fletcher Hamilton, 1920. 43 pp. Paper	Free
**Preliminary Report No. 7. The Clay Industry in California. By E. S. Boalich, W. O. Castello, E. Huguenin, C. A. Logan, and W. B. Tucker, 1920. 102 pp. 24 illustrations. Paper	----
**Preliminary Report No. 8. A Review of Mining in California During 1921, with Notes on the Outlook for 1922. Fletcher Hamilton, 1922. 68 pp. Paper	----

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**Catalogue of books, maps, lithographs, photographs, etc., in the library of the State Mining Bureau at San Francisco, May 15, 1884. 19 pp.	----
**Catalogue of the State Museum of California, Volume II, being the collection made by the State Mining Bureau from April 16, 1881, to May 5, 1884. 220 pp.	----
**Catalogue of the State Museum of California, Volume III, being the collection made by the State Mining Bureau from May 15, 1884, to March 31, 1887. 195 pp.	----
**Catalogue of the State Museum of California, Volume IV, being the collection made by the State Mining Bureau from March 30, 1887, to August 20, 1890. 261 pp.	----
**Catalogue of the Library of the California State Mining Bureau, September 1, 1892. 149 pp.	----
**Catalogue of West North American and many Foreign Shells with Their Geographical Ranges, by J. G. Cooper. Printed for the State Mining Bureau, April, 1894	----
**Report of the Board of Trustees for the four years ending September, 1900. 15 pp. Paper	----
Bulletin. Reconnaissance of the Colorado Desert Mining District. By Stephen Bowers, 1901. 19 pp. 2 illustrations. Paper	Free

MAPS.

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**Register of Mines, with Map, El Dorado County	
**Register of Mines, with Map, Inyo County	
**Register of Mines, with Map, Kern County	
**Register of Mines, with Map, Lake County	
**Register of Mines, with Map, Mariposa County	
**Register of Mines, with Map, Nevada County	
**Register of Mines, with Map, Placer County	
**Register of Mines, with Map, Plumas County	
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**Register of Mines, with Map, Sierra County	
**Register of Mines, with Map, Siskiyou County	
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Register of Oil Wells, with Map, Los Angeles City	

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**Mounted	
**Unmounted	
Map of Forest Reserves in California—	
Mounted	$0.50
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**Map of El Dorado County, Showing Boundaries, National Forests	
**Map of Madera County, Showing Boundaries, National Forests	
**Map of Placer County, Showing Boundaries, National Forests	
**Map of Shasta County, Showing Boundaries, National Forests	
**Map of Sierra County, Showing Boundaries, National Forests	
**Map of Siskiyou County, Showing Boundaries, National Forests	
**Map of Tuolumne County, Showing Boundaries, National Forests	
**Map of Mother Lode Region	
**Map of Desert Region of Southern California	
Map of Minaret District, Madera County	.20
Map of Copper Deposits in California	.05
**Map of Calaveras County	
Map of Plumas County	.25
**Map of Trinity County	
Map of Tuolumne County	.25
Geological Map of Inyo County. Scale 1 inch equals 4 miles	.60
Map of California accompanying Bulletin No. 89, showing generalized classification of land with regard to oil possibilities. Map only, without Bulletin	.25
Geological Map of California, 1916. Scale 1 inch equals 12 miles. As accurate and up-to-date as available data will permit as regards topography and geography. Shows railroads, highways, post offices and other towns. First geological map that has been available since 1892, and shows geology of entire state as no other map does. Geological details lithographed in 23 colors. Mounted	2.50

OIL FIELD MAPS.

These maps are revised from time to time as development work advances and ownerships change.

	Price
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Map No. 3—Santa Maria, including Casmalia and Lompoc	.75
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Map No. 5—Whittier-Fullerton, including Whittier, West Coyote, and Montebello	.75
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Map No. 7—Sunset and San Emido and Kern County	.75
Map No. 8—South Midway and Buena Vista Hills, Kern County	.75
Map No. 9—North Midway and McKittrick, Kern County	.75
Map No. 10—Belridge and McKittrick, Kern County	.75
Map No. 11—Lost Hills and North Belridge, Kern County	.75
Map No. 12—Devils Den, Kern County	.75
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Map No. 14—Coalinga, Fresno County	.75
Map No. 15—Elk Hills, Kern County	.75
Map No. 16—Ventura-Ojai, Ventura County	.75
Map No. 17—Santa Paula-Sespe Oil Fields, Ventura County	.75
Map No. 18—Piru-Simi-Newhall Oil Fields	.75
Map No. 19—Arroyo Grande, San Luis Obispo County	.75
Map No. 20—Long Beach Oil Field	.75
Map No. 21—Portion of District 4, Showing Boundaries of Oil Fields, Kern and Kings counties	.75
Map No. 22—Portion of District 3, Showing Oil Fields, Santa Barbara County	.75
Map No. 23—Portion of District 2, Showing Boundaries of Oil Fields, Ventura County	.75
Map No. 24—Portion of District 1, Showing Boundaries of Oil Fields, Los Angeles and Orange counties	.75
Map No. 25—Kern River Oil Field	.75
Map No. 26—Huntington Beach Oil Field	.75

DETERMINATION OF MINERAL SAMPLES.

Samples (limited to three at one time) of any mineral found in the State may be sent to the Bureau for identification, and the same will be classified free of charge. No samples will be determined if received from points outside the State. It must be understood that no assays, or quantitative determinations will be made. Samples should be in lump form if possible, and marked plainly with name of sender on outside of package, etc. No samples will be received unless delivery charges are prepaid. A letter should accompany sample, giving locality where mineral was found and the nature of the information desired.

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CALIFORNIA STATE MINING BUREAU
FERRY BUILDING, SAN FRANCISCO

LLOYD L. ROOT State Mineralogist

Vol. 19 FEBRUARY, 1923 No. 2

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REPORT XIX OF THE STATE MINERALOGIST

COVERING

MINING IN CALIFORNIA

AND THE

ACTIVITIES OF THE STATE MINING BUREAU

CALIFORNIA STATE PRINTING OFFICE
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CALIFORNIA STATE MINING BUREAU
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NEVADA
MEXICO
PACIFIC OCEAN
DEL NORTE
SISKIYOU
MODOC
HUMBOLDT
TRINITY
SHASTA
LASSEN
TEHAMA
PLUMAS
GLENN
BUTTE
SIERRA
MENDOCINO
LAKE
COLUSA
YUBA
NEVADA
PLACER
YOLO
EL DORADO
SONOMA
NAPA
SOLANO
AMADOR
CALAVERAS
MARIN
CONTRA COSTA
SAN JOAQUIN
TUOLUMNE
MONO
SAN FRANCISCO
ALAMEDA
STANISLAUS
MARIPOSA
SANTA CLARA
MERCED
MADERA
INYO
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KINGS
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Mining Division Boundaries.
Mining Division Offices.

PREFACE.

The State Mining Bureau is maintained for the purpose of assisting in all possible ways in the development of California's mineral resources.

As one means of offering tangible service to the mining public, the State Mineralogist for many years has issued an annual or a biennial report reviewing in detail the mines and mineral deposits of the various counties.

The weak point in work of this character has been that the results of field investigations were so long in preparation that they had lost much of their usefulness by the time they finally appeared in print.

As a progressive forward step in advancing the interests of the mineral industry, publication of the Annual Report of the State Mineralogist in the form of monthly chapters was begun in January, 1922.

A monthly publication admits of several improvements over the old method of procedure. Each issue contains a report of the current development and mining activities of the state, prepared by the district mining engineers. Special articles dealing with various phases of mining and allied subjects by members of the staff are included. Mineral production reports formerly issued as an annual statistical bulletin are published herein as soon as returns from producers are compiled. The executive activities, and those of the laboratory, museum, library, employment service and other features with which the public has had too little acquaintance are reported monthly. The assistance formerly given to producers and consumers by consultation or correspondence only, is also proffered through this medium.

While current activities of all descriptions will be reported in this Monthly Chapter, the Bureau will not discontinue its practice of issuing from time to time technical reports on special subjects. A list of such reports now available is appended hereto, and the names of new bulletins will be added to that list in the future as they are completed.

The Monthly Chapters will be subject to revision, correction and improvement. Constructive suggestions from the mining public will be gladly received, and are invited.

The one aim of the Mining Bureau is to increase its usefulness and to stimulate the intelligent development of the wonderful latent resources of the State of California.

'Mining in California' is sent without charge to those on the Bureau's exchange list and to all others who make written or verbal request.

Pages are numbered consecutively throughout the year, and an index to the complete reports will be included annually in the December number.

TO THE MINING PUBLIC.

The miner is by nature a pioneer and as such, the mining fraternity has evolved into a group whose thoughts have been governed by the pioneering spirit and whose individual activities have been largely independent.

This typical American spirit also dominated commercial and other industrial enterprises for many years, but during the last few decades the leaders of industry and commerce have learned that there are many advantages to be gained by cooperative associations that develop a closer relationship between man and man.

The miner, as a rule, still clings to the idea of independent action, but it is my belief that he can solve many of his problems and help relieve the industry, as a whole, of some of its burdens by working for the good of all through closer cooperation with every agency maintained for the benefit of the mineral industry. In California for the past forty-three years the State Mining Bureau so far as it has been able has rendered service to the large and small operator, the investor, and the prospector.

The service given by the State Mining Bureau is thoroughly discussed in the November 1922 issue of 'Mining in California' by Fletcher Hamilton, retiring State Mineralogist.

It is my belief that those in whose behalf the Mining Bureau functions have not always taken full advantage of the opportunity for cooperative effort, and it is my desire to assist in every possible way in bringing the Bureau into closer mutual relations with every individual interested in any phase of the development of our immense mineral resources. To that end constructive criticism of the State Mining Bureau's work is invited and specific suggestions, wherein a more economical and efficient plan can be devised for carrying on the functions of the Bureau, will be given full consideration.

The united efforts of the State Mining Bureau and those directly and indirectly affected by the condition of this basic industry in California, alone, can give to the mining industry that feeling of strength that will bring it the recognition it deserves from the commonwealth.

With this object in view, it will be my endeavor to cooperate with, and render every aid possible within the scope of the Bureau's activities to one and all.

LLOYD L. ROOT,
State Mineralogist.

DISTRICT REPORTS OF MINING ENGINEERS.

In 1919–1920 the Mining Department was organized into four main geographical divisions, with the field work delegated to a mining engineer in each division working out from a local branch office.

This move brought the Bureau into close personal contact with operators, but did not materially shorten the time between the gathering of data in the field and their publication in the Report of the State Mineralogist at the end of an annual or biennial period.

Mining activities and development noted by district engineers in their respective fields are now embodied in monthly reports published in each issue of 'Mining in California,' thus making these data available within a maximum period of thirty days, and the Monthly Chapter as far as possible a compendium of current mining progress throughout the State.

The counties included in each field division and the location of the local offices are shown on the accompanying outline map of the State. (Frontispiece.)

Although the petroleum industry is but little affiliated with other branches of mining, oil and gas are among the most valuable mineral products of California, and a report by the State Oil and Gas Supervisor on the current development and general conditions in the State's oil fields is included under this heading.

REDDING FIELD DIVISION.

W. B. Tucker, Mining Engineer.

Shasta County.

COPPER.

Akers Group of Mines, located in Secs. 6 and 7, T. 33 N., R. 5 W., 5 miles west of Kennett, in the Backbone mining district. Elevation 1000 feet. Holdings comprise fourteen claims, totaling approximately 280 acres, located along Squaw Creek, between the Mammoth and Balaklala mines and adjoining the Trinity Copper Company's property on the east. The development work on these claims is confined to five tunnels along an intrusion of quartz-augite-diorite, about 200 to 300 feet in width, with a general east and west trend, which occurs in the Balaklala rhyolite. The gossan croppings are prominent and can be followed for about 1000 feet. The ore occurs in small irregular lenticular ore bodies along irregular fissures, one of which trends north and south, with a dip of 60 degrees east, the other having a N. 40° W. trend. The ore is chiefly pyrite, with more or less chalcopyrite and occasional traces of bornite, and carries $2 per ton in gold and silver. Developments comprise five tunnels from 100 to 300 feet in length with numerous crosscuts. The present work is confined to No. 3 tunnel, where a series of parallel north and south fractures and a N. 40° W. fracture are being drifted on. Some small lenses of ore have been exposed along these fractures varying in width from 2 inches to 2 feet, and from 10 to 15 feet in length. In this tunnel there is a drift 261 feet north on a north and south fracture, and one to the south 244 feet on a parallel fracture, and in this south drift the main N. 40° W. fissure was cut.

On the claims located on the south side of Squaw Creek there are two tunnels, which have lengths of 100 feet. In the lower tunnel, which is driven on a northwest fracture a small lens of ore 40 feet in length and about 2 feet in width has been developed. Samples taken from this orebody are reported to carry from 2 to 6 per cent copper. One man employed on development work. J. W. Akers of Kennett, owner.

Woodrow Wilson Mine, located in Sec. 4, T. 33 N., R. 2 W., 1¾ miles southwest of Ingot, in the North Cow Creek Mining District. Elevation 1800 feet. Owners are the *Triumvate Mining Company* of Ingot, H. M. Swift, president, J. H. Jones, secretary. The holdings consist of the following claims: Homestead Extension, Woodrow Wilson, Woodrow Wilson Extension, Woodrow Wilson No. 2, No. 3 and No. 4, approximately 160 acres, located on the East Copper belt, and adjoining the Afterthought Copper Company's property on the west. Two systems of veins have been developed, known as the Homestead and Woodrow Wilson lodes. The former occurs in a sheer zone in the rhyolite which lies south of the contact of the rhyolite and shales of the Pit formation, and has an easterly and westerly trend with a dip of 75 degrees to the north. Two shafts have been sunk on this vein to depths of 35 feet, developing 6 to 8 feet of quartz, in which occur irregular lenses of ore. The ore is of a different character from that developed in the other mines of this district, in that it carries high values in lead. The quartz contains galena, chalcopyrite, pyrite and sphalerite. Samples taken from the vein are reported to assay, copper 2.5 per cent, lead 17 per cent, zinc 3 per cent, gold and silver $3 per ton.

The Woodrow Wilson lode lies close to the contact of rhyolite with black and gray shales, and strikes northeast and southwest, with a dip of 50 degrees to the northwest. The ore is similar to that of the Afterthought mine, being composed largely of pyrite, sphalerite, chalcopyrite and galena with local traces of bornite. Samples taken from No. 1 and No. 2 tunnel workings are reported to assay, copper 1 per cent, lead 6 per cent, zinc 13 per cent, gold and silver $2 per ton. Developments on this lode consist of three tunnels; No. 1 tunnel is driven N. 30° E., 140 feet in the slate hanging wall, then 120 feet east to the contact, where some small lenses of ore were found. No. 2 tunnel is located 180 feet northwest and 70 feet below No. 1 tunnel, and is a crosscut driven 400 feet southwest in the slate to the contact, with a drift to the northeast 200 feet on the contact. The ore developed occurs on the contact in the rhyolite, and is quartz containing small lenses of ore. Owing to the fact that no crosscuts have been driven in the rhyolite in these workings, the possible extent of the orebodies are undetermined. No. 3 tunnel, which is located 650 feet west, and 100 feet below No. 2 tunnel, is a crosscut tunnel driven S. 70° E., 200 feet in the slate hanging wall towards the contact. It will require approximately 300 feet of additional drifting to cut the orebody developed in No. 2 tunnel workings. Only assessment work is being done on the property.

Uncle Sam Mine, one of the noted quartz mines of Shasta County, is located in Secs. 1 and 6, T. 33 N., R. 6 W., 6 miles west of Kennett, in the Backbone Mining District. Elevation 2300 feet. The present owners are *F. H. Dakin Company* of San Francisco, who control 140

acres of patented mineral ground. The property is now under lease and bond to the *American Zinc, Lead and Smelting Company* of St. Louis. Offices of the exploration department of this company are at 55 Congress street, Boston, Mass. The company also have under option the *Colma Copper Group* of claims, which are located in Secs. 3 and 6, T. 33 N., R. 6 W., and adjoin the Uncle Sam group on the north and east. The Colma Copper group of claims lie west and southwest of the Mammoth Mine, and cover the probable direct extensions of the ore bodies developed in the Mammoth Mine, along the so-called 'California fissure' or shear zone, which has a general trend of N. 80° E. The trend of the tabular ore deposition has been developed in the Mammoth Mine from the point of original exposure for a distance of over 4000 feet towards the Colma Copper Group boundaries. Therefore the logical point for further and deeper development of the California fissure would probably be on the Colma Copper territory. Evidently with this idea in view the present company is driving the main crosscut known as No. 5 level of Uncle Sam mine. This crosscut tunnel is driven N. 40° E., and cuts the Uncle Sam vein 1200 feet from the portal, and about 350 feet beyond this vein, cuts a parallel vein of quartz 3 feet in width, which is heavily mineralized with pyrite and chalcopyrite. The crosscut tunnel has been driven ahead 1300 feet, from the point where the Uncle Sam vein was cut, and the company proposes to continue driving ahead to intersect the Mammoth ore fissure.

The formation in which the Uncle Sam veins occur is Balaklala rhyolite which is cut by a dike of andesite porphyry. The greater values were found in the eastern portion of the mine, about this dike.

Two veins are developed in the Uncle Sam mine, which strike northwest and southeast and dip northeast, with a thickness of four feet. A new 10″ x 12″ Rand Compressor, driven by a 50-h.p. motor has been installed. Electric power is secured from the Pacific Gas and Electric Company. Eight men are employed. C. B. Nichols, superintendent.

Bibliography: State Mineralogist Reports X, p. 639, XI, pp. 47, 395, 398; XII, p. 258, XIII, p. 367, XIV, pp. 802-803.

The *United States Smelting, Refining and Mining Company*, which controls the Mammoth Smelter, Mammoth, Keystone Sutro and Balaklala mines, situated near Kennett, on the West Copper belt is reported to be planning to resume operations in the near future.

GOLD.

Index Group of Mines. Located in Sec. 6, T. 32 N., R. 6 W., one-half mile north of Oak Bottom, in the Stella Mining District. Elevation 1500 feet. Owners, I. F. Rice and A. Kaleel of Whiskeytown. Holdings consist of 12 claims located on a ridge north of Clear Creek.

A series of parallel quartz veins occur in alaskite porphyry intrusions in meta-andesite. The veins have a general east and west trend, with dips north. Widths vary from 2 inches to 6 feet. Developments consist of two tunnels, one 140 feet in length and the other 150 feet, and a number of shallow prospect holes and open cuts. There are three men employed.

Texas Consolidated Mine, located in the Old Diggins district, 9 miles north of Redding, in Sec. 33, T. 33 N., R. 5 W., is under lease to Harvey Sallee of Old Diggins. Several men are employed driving a crosscut on tunnel level No. 5 to pick up the vein, which was faulted on this level.

Siskiyou County.

Fairchild Mine, which is situated at the head of Long Gulch, west of Hawkinsville, has been taken under bond by T. W. Billings and associates of Oregon. It is reported that in recent development work on the property, a rich shoot of ore was encountered. The vein is said to have a width of 8 feet, and to carry high values.

The Rainbow Mine, located 1½ miles northwest of Hawkinsville, is being developed by T. C. Quinn of Oakland. It is reported that after drifting 90 feet, a vein of quartz was developed that carries high values in gold.

PLACER MINING ACTIVITY.

It is reported that there will be increased activity in placer mining this spring near Cecilville, Oak Bar, Forks of the Salmon River, Sawyers' Bar and also on Elk Creek near Happy Camp. Due to abundant rains and heavy snowfall this winter the season's run for hydraulic mining should be somewhat more extended than previous years. Therefore, there should be a large output in placer gold from the county this season.

Trinity County.

Cabode Mine, which is situated in Donnelly Gulch, between Lewiston and Deadwood was recently leased by James Welsh and Charles Paulsen of Lewiston.

In prospecting and development work on the property a small vein of quartz has been developed which carries high values in gold. Samples taken from the ledge, which is from three to six inches wide, assayed from $5,000 to $6,000 per ton. About three tons of rich ore are on the dump awaiting shipment. The property has not been worked for many years.

Union Hill Hydraulic Mine, is located in Sec. 6, T. 32 N., R. 9 W., one mile east of Douglas City, between Weaver Creek and Trinity River, and contains 300 acres.

The property is under lease to T. R. Arbuckle of Weaverville, who during the past year repaired the ditch lines and now has two 7-inch giants in operation under a head of 450 feet.

Water for hydraulic purposes is secured from Grass Valley, and the East Fork of Weaver Creeks, through ditches, flumes, pipes and tunnels that are said to be 20 miles in length. Capacity 5000 inches.

The property was last operated by the *Trinity Consolidated Hydraulic Mining Company* in 1913 and 1914. The gravels of the Union Hill mine are uncemented and lie horizontally on one of the recent terraces about 175 feet above the Trinity River. The depth of gravel is from 50 to 150 feet and is composed chiefly of red clay, sandy clay, bluish gray gravel lying on mica schist bedrock. Nearly

all the values are found in the blue gravel at the bottom on the mica schist bedrock. Seven men are employed.

Bibliography: U. S. G. S. Bulls. No. 430, pp. 51-56; No. 470, pp. 16-18; No. 540, pp. 18-19; State Mineralogist's Reports XIII, p. 465; XIV, p. 915.

The Dannenbrink Hydraulic Mine, located about 6 miles north of Junction City, at an elevation of 2000 feet, on Canyon Creek, in Secs. 12, 13 and 24, T. 34 N., R. 11 W., owned by C. Dannenbrink Estate, has recently been acquired by the *Pittsburg-Comstock Mining Company* of Virginia City, Nevada. The depth of gravel is from 30 to 100 feet with 10 feet of soil overburden with slate bedrock. The company is constructing a new ditch said to be 10 miles in length. Twenty to forty men are employed. T. M. Gibson is superintendent.

Bibliography: State Mineralogist's Report XIII, p. 444.

The 7-cubic feet dredge of the *Lewiston Dredging Company*, which is located on the Martin ranch, north of Lewiston on the Trinity River, was placed in operation during the early part of January.

AUBURN FIELD DIVISION.

C. A. Logan, Mining Engineer.

New Report on the Mother Lode Region by the State Mining Bureau.

As the only agency maintained by the State of California to aid and encourage the development of the vast but only partly utilized mineral resources of the commonwealth, it is the duty of the State Mining Bureau to give information on every phase of mining to the inquirer. Among other duties, the Bureau is directed by law to "make, facilitate and encourage special studies of the mineral resources and mineral industries of the state." Under this head comes the new report being prepared on the gold quartz mines of the Mother Lode region. This report (for which a great deal of information not hitherto published has been gathered already) is intended to bring up-to-date in one volume as much as can be learned of the geology, production, history and possibilities of the Mother Lode district.

The first step in this work was the preparation of a new list of mine owners, who must be consulted in a great many cases to get maps and other details regarding idle mines. Often the owners know little about their properties, having come into possession of them by inheritance or purchase when no work was going on. In such cases former superintendents and employes must be found, as these men are often the only source of accurate information. Their knowledge of the mines must be saved, as the loss of it is a very serious handicap if the property is ever reopened.

For a new claim map of the region the various available district maps of private engineers and the records of the U. S. Land Office will be combined and brought to a common scale.

The areal geology of much of the region has been shown in the U. S. G. S. folios on a small scale. It is believed that something can be contributed to the geologic record by examining the geology of a number of selected localities along the lode and recording it on a scale large

enough to show details of structure and formations that could not be shown on the above folios. This involves new field work along parts of the lode that have not received much attention in past reports.

Details are being collected regarding the occurrence, size and disposition of ore-shoots and the observed geologic conditions thought responsible for ore formation. The proper interpretation of this information, gained from visits to active mines and from maps and records of those now closed, is of value when applied to unexplored territory on the same lode. The history of the mines will be preserved in easily accessible form instead of being scattered and lost when mines are closed, maps and records are burnt and owners move away or die.

For the proper classification of wall rocks and ores thin sections of specimens will be studied.

Some study will be made of the mines northward from El Dorado County to determine their relation, if any, with the mines to the south, in the commonly accepted Mother Lode section.

SAN FRANCISCO FIELD DIVISION.

C. McK. Laizure, Mining Engineer.

Monterey County.

Monterey Bay Salt Company, Vierra Bros., owners, Moss Landing, California. This property is located at sea level at Moss Landing. The Pajaro Valley Railroad (narrow gauge) connects it with Watsonville. It is also on a steamer landing, as indicated by the name.

Salt is extracted from sea water at this plant by solar evaporation. The salt works comprises four ponds. Two months are required for the water to evaporate to the density at which the salt crystallizes out and settles on the bottom of the ponds. The layer of crystals is from 4 inches to 6 inches in thickness.

After the salt has formed, the ponds are drained and the salt is then broken up with shovels and pumped, with saturated brine as a carrier, to a washing plant. Here it is washed, then crushed and screened, and put on the market without further refining.

The product is sold mostly to fish-curing plants at Monterey and to ice cream plants, dairies, and cattle men. Nine or more men are employed in season.

The salt from the waters of the Pacific at this point shows a high analysis, and is said to be more uniform than that from San Francisco Bay water on account of the river waters flowing into the latter. It contains very little magnesia. An analysis of a moisture-free sample shows:

	Per cent
Sodium Chloride ($NaCl$)	99.75
Magnesium Chloride ($MgCl_2$)	0.00
Sodium Sulphate (Na_2SO_4)	0.05
Calcium Sulphate ($CaSO_4$)	0.14
Water insoluble matter	0.06
Organic matter	nil
Total	100.00

LOS ANGELES FIELD DIVISION.

M. A. NEWMAN, Mining Engineer.

Kern County.

Western Silica Company. The silica deposit of this company is located 18 miles east of Lancaster, or 13 miles southeast of Muroc. It consists of a wide vein of bull quartz, which is being mined by glory hole methods. About 20 per cent of wall rock is sorted out in the process of mining. The material shipped runs 98 per cent silica. About two cars a week at present are being shipped to Los Angeles. A portable Chicago Pneumatic Compressor is used in the mining operations.

P. Carney is president and superintendent of the company.

San Bernardino County.

The Rand District. The big Kelly Mine was discovered by Hamp Williams, April, 1919. Nearly four years have now elapsed, and the outstanding feature of this period is the development of one large and profitable mine in the holdings of the California Rand Silver, Inc.

Next to the holdings of the California Rand Silver, Inc., the Coyote, of the Randsburg Silver Mining Company, has given most promise of developing into a mine of real importance.

Following the Coyote, the Rand Silver King, Inc., locally known as the Bisbee Bray, has developed a number of veins of medium grade ore, but nothing of a shipping grade. The present development now taking place in the Silver King, Black Hawk, Grady, Crites, and Silver Basin shafts, will answer as to what the future of the silver zone of the Rand District will be. Due to the fact that a granite wash, which is several hundred feet thick, covers the entire region east of the so-called 'dyke,' near which the apex of the Kelly Mine was found, it means that a company must spend at least $25,000 to get a 'look in' as to what may lie under it. However, this expenditure is entirely legitimate and justifiable when the possibility of finding such extremely rich ore as found in the Kelly Mine is taken into consideration.

Grady and Sill. After making a fortune out of the Grady lease on the Big Kelly Mine (California Rand Silver, Inc.), Grady and Sill decided to invest part of their profits on deep development work in the camp. At a point approximately 3000 feet southeast of the main shaft of the Kelly, the Grady shaft was sunk. It is now 1095 feet deep. It first passed through 665 feet of granite wash and then encountered the schist formation. At a depth of 815 feet, the first showings of ruby silver were seen. A station was cut at a depth of 975 feet and a crosscut run north 93 feet, where the vein was cut. This was then drifted on west for 150 feet and averaged 2 to 4 feet in ore-bearing material, giving small values in silver. At present a crosscut is being run from the 1085 foot station to cut the vein. Crosscut now is in 100 feet. Owners, Grady and Sill.

Johannesburg Mining and Milling Company. This company, controlling the Silver King and Silver Moon properties, is under lease to what is known as the *Moon King Leasing Company.* Its principal

stockholders are Tacoma people and its Silver King property is considered among the more valuable in the silver belt of the Rand District.

The Silver King Group of this company lies about 1800 feet easterly from the main shaft of the California Rand Silver, Inc. The group consists of the following claims: Silver King 1, 2, 3 and 4, and the Lucky Fraction. Approximately 86 acres.

The Silver King shaft has been sunk near the northwest corner of Silver King claim No. 2. After sinking through 555 feet of a consolidated granite wash or 'Arkose' formation, the shaft entered the so-called schist formation of the region and at a depth of 603 feet the first showings of ruby silver were encountered. From 603 feet to 682 feet, the shaft was in mineralized schist. Car samples of the material as hoisted between the above depths averaged from $8 to $34 a ton. Samples taken of the rich streaks gave values of $100 and better per ton. At the depth of 682 feet the shaft passed through the vein or mineralized schist. It is proposed to crosscut east at a depth of 700 feet in the shaft to cut the vein and then drift both ways to explore the extent of this ore body. The finding of ore in this shaft is one of the most important developments in the district and much new development is anticipated to the east and northeast of the Silver King Group.

The Silver Moon Group lies about 400 feet west of the main shaft of the California Rand Silver, Inc. It consists of the Silver Moon Claim and the Belle Brown Fraction.

Considerable development work has been done on the property, as follows: The shaft has been sunk to a depth of 550 feet. On the 300-foot level a crosscut was run west 140 feet and also to the east 102 feet. A vein 5 to 6 feet wide was cut 35 feet east of the shaft, assaying $2 to $3 in gold and one ounce silver per ton. A drift was run on the vein 35 feet north and 25 feet south. Its course was N. 30° E. and dip 45 degrees southeasterly. On the 515-foot level a crosscut was run 347 feet east. At 269 feet a vein was cut and drifted on 35 feet north and south where cut.

President and general manager, Moon King Leasing Company, W. P. Buckley; secretary, Frank Oakley. Office, Tacoma, Washington.

Pittsburg Mount Shasta Mining and Milling Company. (Black Hawk). This company is sinking a new vertical shaft about 150 feet south of the south line of the Rand Silver King, Inc. The shaft is now down 578 feet. It was sunk through 140 feet of consolidated wash and then entered the silver bearing schist formation. Inasmuch as the Rand Silver King, Inc., has a number of veins, which will in all probability enter the claims of this company, the sinking of this shaft gives much promise of favorable developments. It is planned to crosscut the formation when the shaft attains a depth of 700 feet.

J. O. Greenan is superintendent of the property.

Rand Consolidated Silver Mining Company. This company has started sinking a 1000 foot shaft on the Big Four claim. It is located about 2000 feet northeast of the Silver King shaft, and is in direct line of the

zone of mineralization as extended from the most recent developments in the workings of the California Rand Silver, Inc.

The company is financed by strong Bakersfield interests and the work will be prosecuted with all possible speed.

A. J. Crites of Bakersfield is president of the company.

Silver Basin Mining Company. This company, whose claims lie about 3000 feet south of the new shaft of the Pittsburg Mount Shasta Mining and Milling Company (Black Hawk), controls the following claims: Golden Era, Hidden Treasure, Ransome, Mandan Fraction, O'Farrell Fraction and Y. W. Fraction. In all, 60 acres.

A vertical shaft 4½ feet by 7½ feet is now being sunk to a depth of 600 feet. If this development proves successful in opening up new silver veins in the schist formation it will mean much for the future of the camp, as this development will be nearly one mile south of the main shaft of the California Rand Silver, Inc., and will do much to prove out the silver area of this region.

K. S. Snowlton, president. Office, Redlick Building, Bakersfield, Cal.

San Bernardino County.

Alvord Mine. This well known old gold property, situated out from Yermo, is soon to be reopened, according to information received from the owner, Mr. McCormick of Yermo.

L. S. Emerson is developing a gold prospect in the Dry Lake Mining District, situated 60 miles east of Victorville. A drift is being run in on a vein two to four feet wide, which is said to assay $32 gold, per ton. Drift now in about 50 feet.

The old *Fortuna Mine* in this same section is also to be reopened by Mr. Emerson.

Myrick. A prospect of much promise has been opened up by 'Shady' Myrick of Johannesburg. It is situated 45 miles east of Johannesburg.

The formation here consists of steeply-dipping quartzites, altered limestones and shales. Several rhyolite dykes have also been intruded between the bedding planes of the above. The general strike of the formation is north and south. Cutting across this formation in a northwesterly and southeasterly direction is a gold-bearing vein which at several points has been exposed by open cuts. Pannings taken of this vein show values of $30 and better.

At the time the property was visited insufficient work had been done to accurately determine either the width or strike of the ore. The surface showings, however, well warrant the expenditure of money to more fully open up the ore.

It is reported the property is now under bond for $150,000 and that an initial payment has been made.

'Shady' Myrick has prospected the desert for many years and has to his credit the discovery of a semi-precious stone which has been called Myrickite after him.

The property consists of the following claims: Black Gold Nos. 1, 2, 3, 4, and 5, Lime, Red Rock and Palmyra, approximately 140 acres in all.

F. M. Myrick, Johannesburg, owner.

Pacific Marble Quarries Company. This old Baxter quarry situated at Baxter, 197 miles east of Los Angeles on the Union Pacific Railroad, is being reopened for large scale operation by the above company. A railroad spur has been put in by the Union Pacific, and the management reports that a daily production of 250 to 300 tons will soon be maintained. This limestone is to be shipped to sugar plants and smelters. Lime is also to be made for building purposes.

About 20 men employed at present.

Company has offices at 341 Citizens National Bank Building, Los Angeles.

President, R. B. Knox; secretary and treasurer, J. M. Finlayson; general manager, W. A. Griffing; superintendent, M. J. Johnson.

Smith Mine. This gold property is one and one-half miles west of Baxter and one-half mile north of the Union Pacific Railroad. It consists of the three claims—Ben, Ben Extension, and Trojan. The veins occur in a diorite dyke near a rhyolite contact and the outcrop is very noticeable, due to oxidation.

Vein courses northeast and southwest and is nearly vertical. Development consists of a 50-foot shaft on the Ben claim.

Several thousand dollars of high grade ore was shipped out of this shaft.

At present a crosscut tunnel is being run to cut this vein at a greater depth at a point under the bottom of the shaft.

Ed Smith, owner. Address, Baxter, Cal.

OIL FIELD DEVELOPMENT OPERATIONS.

R. E. Collom, State Oil and Gas Supervisor.

From January 13, 1923, to and including February 10, 1923, the following new wells were reported as ready to drill:

Company	Sec.	Twp.	Range	Well No.	Field
FRESNO COUNTY:					
Paragon Oil Company	17	19	15	16	Coalinga
St. Paul Cons. Oil Company	18	19	15	1	Coalinga
KERN COUNTY:					
Belridge Oil Company	34	30	24	4	Elk Hills
Pacific Oil Company	35	30	24	102	Elk Hills
Pan American Petroleum Co.	35	30	23	1	Elk Hills
Union Oil Company	26	30	24	Elk Hills 4	Elk Hills
Union Oil Company	26	30	24	Elk Hills 3	Elk Hills
Berry & Ewing	31	32	24	8	Midway
C. C. M. O. Company	8	32	23	78	Midway
North American Oil Cons.	30	31	24	1	Midway
Pacific Oil Company	25	31	23	35	Midway
Pacific Oil Company	7	32	24	41	Midway
Pacific Oil Company	5	32	24	36	Midway
El Dora Oil Company	6	12	23	1	Sunset
Lakeview No. 2 Oil Company	4	11	23	Midfields 8	Sunset
Surprise Oil Company	36	32	23	9	Sunset
C. C. Magenheimer et al.	20	25	27	1	----------
Standard Oil Company	28	11	20	Kern Co. 2 2	----------
Standard Oil Company	28	11	20	Kern Co. 2 3	----------
LOS ANGELES COUNTY:					
Anchor Oil Company	19	4	12	Henderson 1	Long Beach
Anchor Oil Company	19	4	12	Butler 2	Long Beach
Bush-Voorhis Oil Company	19	4	12	8	Long Beach
Bush-Voorhis Oil Company	19	4	12	10	Long Beach
California Signal Oil Company	30	4	12	1	Long Beach
Casa Blanca Oil Company	19	4	12	Barteau 1	Long Beach
Commonwealth Trust	19	4	12	1	Long Beach
Cunningham Oil Company	30	4	12	1	Long Beach
Dabney Oil Syndicate	36	4	12	23	Long Beach
Davis & MacMillan	30	4	12	5	Long Beach
de Lendrecie Oil Well	19	4	12	Garrett 2	Long Beach
Edens & Bernstein	19	4	12	1	Long Beach
Walter H. Fisher	30	4	12	4	Long Beach
Fred B. Foster & Co.	19	4	12	42	Long Beach
Fred B. Foster & Co.	19	4	12	41	Long Beach
General Petroleum Corp.	20	4	12	Scoco 5	Long Beach
General Petroleum Corp.	19	4	12	K. & H. 2-A	Long Beach
Golden Eagle Oil Company	30	4	12	2	Long Beach
Golden Eagle Oil Company	30	4	12	3	Long Beach
Golden West Syndicate	29	4	12	1	Long Beach
Henderson Petroleum Syn.	30	4	12	Kethroe 1	Long Beach
Huntington & North. Pet. Co.	30	4	12	4	Long Beach
Huntington & North. Pet. Co.	30	4	12	5	Long Beach
Huntington & North. Pet. Co.	30	4	12	6	Long Beach
Interstate Oil Corporation	29	4	12	Goddard 2	Long Beach
A. T. Jergins Trust	19	4	12	5	Long Beach
Keck Syndicate No. 4	30	4	12	2	Long Beach
Keck Syndicate No. 5	29	4	12	2	Long Beach
E. G. Lewis	30	4	12	1	Long Beach
Marine Oil Corporation	29	4	12	5-A	Long Beach
L. H. Mitchel & Sons	30	4	12	1	Long Beach
Pan-Hellenic Oil Company	19	4	12	1	Long Beach
Pan-Pacific Cons. Oil Co.	20	4	12	2	Long Beach
Petroleum Midway Co., Ltd.	30	4	12	Nelson 1	Long Beach
Prouhet & Troupe	19	4	12	Oliver 1	Long Beach
Queen City Drilling Company	24	4	13	1	Long Beach
Rex Oil Company	19	4	12	Jarrel 1	Long Beach
Rogers Oil Well	29	4	12	Rogers 2	Long Beach
Shell Company	20	4	12	Marcellus Com. 4	Long Beach
Shell Company	28	4	12	Connett 1	Long Beach
Signal Hill Oil Syn No. 1	19	4	12	Malin 1	Long Beach
Signal Union Syndicate	30	4	12	1	Long Beach
Superior Oil Company	29	4	12	Swaffield 2	Long Beach
Tay Bar Syndicate	30	4	12	1	Long Beach
E. D. Taylor Oil Syn. No. 1	19	4	12	1	Long Beach

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES CO.—Continued:					
Union Oil Company	30	4	12	L. B. Com. 9	Long Beach
United Oil Company	30	4	12	Hass 6	Long Beach
Windermere Oil Company	19	4	12	2	Long Beach
Amalgamated Oil Company	5	3	11	Butterworth 7	Santa Fe Springs
Amalgamated Oil Company	5	3	11	Butterworth 8	Santa Fe Springs
Ambassador Petroleum Corp.	5	3	11	Baker 1	Santa Fe Springs
Are-Bee Oil Syndicate No. 2	7	3	11	1	Santa Fe Springs
Coalinga Mohawk Oil Co.	7	3	11	Parkford 1	Santa Fe Springs
General Petroleum Corp.	5	3	11	Santa Fe 68-A	Santa Fe Springs
Gilbert Petroleum Interests	7	3	11	1	Santa Fe Springs
Industrial Oil Syn. No. 4	7	3	11	4-2	Santa Fe Springs
Industrial Oil Syn. No. 5	7	3	11	1	Santa Fe Springs
C. C. Julian	6	3	11	3	Santa Fe Springs
Lawrence Santa Fe Oil Co.	7	3	11	Owen 1	Santa Fe Springs
Lincoln Oil Syn. No. 1	18	3	11	1	Santa Fe Springs
Russel Petroleum Company	1	3	12	2	Santa Fe Springs
Santa Fe Dome Oil Co.	8	3	11	Meyer 1	Santa Fe Springs
Santa Fe Sprgs. Oil Syn. No. 1	6	3	11	3	Santa Fe Springs
H. S. Sewell & Co.	7	3	11	1	Santa Fe Springs
Shamrock Oil Syndicate	8	3	11	1	Santa Fe Springs
Shell Company	6	3	11	Slusher 2	Santa Fe Springs
Shell Company	31	2	11	Thompson 2	Santa Fe Springs
Standard Oil Company	6	3	11	Johnson 5	Santa Fe Springs
Standard Oil Company	6	3	11	Walker Com. 9	Santa Fe Springs
Standard Oil Company	5	3	11	S. Whittier Com. 11	Santa Fe Springs
Triangle Oil Company	7	3	11	1	Santa Fe Springs
Joe B. Turman Oil Syn. No. 2	12	3	12	2-B	Santa Fe Springs
Union Oil Company	31	2	11	Howard 5	Santa Fe Springs
Union Oil Company	5	3	11	Meyer 7	Santa Fe Springs
Union Oil Company	6	3	11	Alexander 7	Santa Fe Springs
Union Oil Company	5	3	11	Farwell 4	Santa Fe Springs
C. C. M. O. Company	15	4	14	Torrance 5	Torrance
George F. Getty	8	4	14	Frederiksen 1	Torrance
Standard Oil Company	8	4	14	Kirk Com. 3	Torrance
Standard Oil Company	10	4	14	Torrance Com. 3	Torrance
Consolidated Mutual Oil Co.	31	3	13	1	----------
ORANGE COUNTY:					
Catalina View Oil Company	35	5	11	2	Huntington Beach
Globe Petroleum Corp.	34	5	11	4	Huntington Beach
Huntington Signal Oil Co.	2	6	11	2	Huntington Beach
Miley-Keck Oil Company	2	6	11	33	Huntington Beach
Miley-Keck Oil Company	2	6	11	34	Huntington Beach
Miley-Keck Oil Company	2	6	11	35	Huntington Beach
Miley-Keck Oil Company	2	6	11	36	Huntington Beach
Miley-Keck Oil Company	2	6	11	42	Huntington Beach
Petroleum Midway Co., Ltd.	2	6	11	Krahling 1	Huntington Beach
Republic Petroleum Company	2	6	11	Community 5	Huntington Beach
Republic Petroleum Company	2	6	11	Community 6	Huntington Beach
Shell Company (U. D.)	2	6	11	Davenport 6	Huntington Beach
Standard Oil Company	2	6	11	Williams 1	Huntington Beach
Union Oil Company	34	5	11	Copeland 13	Huntington Beach
SAN BERNARDINO COUNTY:					
Mizpah Oil Company	16	11	9	1	----------
SANTA CRUZ COUNTY:					
Danish Oil & Development Co.	Rancho Refugio	11	2	2	----------
STANISLAUS COUNTY:					
E. D. Irons	30	6	8	1	----------
TULARE COUNTY:					
W. R. Mitchell	22	24	24	1	----------
VENTURA COUNTY:					
Schell & Jennings	32	4	18	5	Piru
W. H. de Grummond	21	4	21	Ahnlauf 1	Santa Paula
Oak Ridge Oil Company	13	3	21	Harvey 11	South Mountain
Oak Ridge Oil Company	13	3	21	South Mountain 12	South Mountain
Oak Ridge Oil Company	18	3	20	Willard 14	South Mountain
General Petroleum Corp.	28	3	23	Notten 4	Ventura
Golden West Association	4	2	23	2	Ventura
Shell Company	28	3	23	Taylor 6	Ventura

SPECIAL ARTICLES.

Detailed technical reports on special subjects, the result of research work or extended field investigations, will continue to be issued as separate bulletins by the Bureau as has been the custom in the past.

Shorter and less elaborate technical papers and articles by members of the staff containing much information that will add to the permanent value of the Monthly Chapter are included in each number of 'Mining in California.'

It is anticipated that these special articles will cover a wide range of subjects both of historical and current interest; descriptions of new processes, or metallurgical and industrial plants, new mineral occurrences, and interesting geological formations, as well as articles intended to supply practical and timely information on the problems of the prospector and miner, such as the text of new laws and official regulations and notices affecting the mineral industry.

MINING LOCATION ON STOCK-RAISING LANDS.

(Numerous inquiries have been received by the State Mining Bureau regarding the rights of a mining claim locator on land taken up under the Act of Congress, entitled "An act to provide for stock-raising homesteads, and for other purposes," commonly called the 640-acre homestead act; where such holdings conflict with mining claims or include mineral-bearing land.

At the request of the State Mineralogist, the following statement setting forth the rights of a mining locator on such lands was prepared by the United States Bureau of Mines, and may be taken as official.)

RIGHTS OF LOCATOR.

"The rights of a locator of a mining claim on grazing or stock-raising lands, is governed by section 9 of the Act of Congress, approved December 29, 1916, entitled 'An act to provide for stock-raising homesteads, and for other purposes.' (39 U. S. Stats., 862.)

"The entries and patents issued under the act must contain a reservation to the United States of all coal and other minerals in any such lands, 'together with the right to prospect for, mine, and remove the same.' Any coal or other mineral deposits in any such lands are subject to disposal by the United States, according to the coal and mineral land laws in force at the time of any such disposal. All qualified persons are expressly given the right at all times to go upon any such lands entered or patented, for the purpose of prospecting for coal or other mineral therein. Any such prospector, however, is not to injure, damage or destroy any permanent improvements of any such entryman or patentee, and he is required to compensate the entryman or patentee for any damage on such lands.

"A prospector who has thus discovered coal or minerals in or upon any lands that have been entered or patented as grazing or stock-raising lands under the provisions of the act, may, upon acquiring from the United States, the coal or other mineral deposits in such lands, and the right to mine and remove the same, then re-enter and occupy so much of the surface of such land as may be reasonably incident to the mining

and removal of the coal or other minerals, but upon the following conditions:

"1. Before re-entering for mining and removing the minerals, he must secure the written consent or waiver of the homestead entryman or patentee, and

"2. He must pay damages to crops or tangible improvements if and when an agreement is reached as to the amount of such damages.

"In lieu of either of the provisions numbered 1 or 2, he may execute a bond or undertaking to the United States for the use and benefit of the entryman, patentee or owner of the land, to secure the payment of all damages to crops or tangible improvements of the entryman or owner, as such damages may be determined and fixed in an action brought upon the bond or undertaking in any proper court. The bond or undertaking must be in form and in accordance with rules and regulations prescribed by the Secretary of the Interior and is to be approved by and filed with the register and receiver of the land office in the district wherein the land is situated.

"Any patents issued for coal or other mineral deposits under the provisions of the act, must contain notations declaring them to be subject to the provisions of the act with reference to the disposition, occupancy and use of the land as permitted to an entryman or patentee.

"Under the first section of the act no land can be entered as a stock-raising homestead until the lands shall have been designated by the Secretary of the Interior 'as stock-raising lands.' After the lands have been so designated by the secretary, then qualified persons may enter and hold the same for the purposes contemplated by the act and may hold and possess the same for such purposes as against all persons except mining prospectors and those who have acquired the right to mine and remove minerals discovered, as provided in section 9.

"An entryman, patentee or owner of any such lands may, without doubt, make a valid mining location upon the lands, the same as any other person, but in making his mining location, he must comply with the law in manner and form as if he were a stranger.

"The entryman, patentee or owner of lands acquired under this act for grazing or stock-raising purposes, has no preference right whatever to locate a mining claim upon the land. In this respect he is on an equality with all other persons and can take no advantage whatever of the fact that he is the owner or in the possession of the land.

"The rights of all persons making mining locations upon any such land used for grazing or stock-raising purposes, must be measured and determined by the rules of priority that govern in relation to the location of mining claims upon public lands generally.

"Such grazing or stock-raising lands, held under the act, are, for the purposes of making mining locations, in effect, public lands.

"The fact that the notice of a mining location was posted in the night time could not affect its validity, if the locator otherwise complied with the law.

"The owner or occupant of any such grazing or stock-raising lands who defaces or destroys a notice posted upon such lands of a mining location, is subject to the same penalty and punishment as a person who destroys any notice of a mining location."

LIMESTONE DEPOSITS OF McCLOUD RIVER, SHASTA COUNTY, AND THEIR POSSIBLE VALUE FOR CEMENT MATERIAL.

By W. B. Tucker, Mining Engineer.

Description of the McCloud Limestone.

In the Redding Folio of the United States Geological Survey this belt of limestone is described as follows: The limestone can be traced more or less continuously for twenty-five miles from the north end of the Sacramento Valley, near Lilienthal, northward to Nawtawakit Mountain, where it passes beyond the quadrangle boundary. Near Lilienthal it begins with a series of small limestone lenses, apparently included in Dekkas andesite and worn down to the level of the valley plain. Although much metamorphosed and in some places wholly crystalline, they contain distinct traces of fossils definitely fixing their

View of McCloud Limestone Exposure, Section 13, Township 34 North, Range 4 West, Shasta County.

age. Farther north they rise above the plain and form hills increasing in prominence to Gray Rocks. For ten miles beyond Pit River the escarpment of the McCloud limestone forms one of the principal topographic features, but it is very much cut up by quartz-augite-diorite into irregular patches of limestone separated from one another by distances varying from a few feet to over two miles. How much of this irregularity may be due to the original lenticular character of the limestone is not known, but there can be no doubt that it is mostly due to the dissecting igneous rock. The largest mass is that opposite the United States Fishery, in Sec. 13, T. 34 N., R. 4 W. Two other large masses occur in the Hirz Mountain region, but farther north, in the western portion of Nawtawakit Mountain, there is a considerable decrease in size.

The largest and most accessible exposures of the McCloud limestone are at Gray Rocks, near Bayha, the old Bass's ranch locality and farther north on the McCloud River opposite the United States Fishery. The two localities are separated by quartz-augite-diorite, which cuts the limestone.

Topography.

The McCloud limestone generally resists weathering more effectively than the associated quartz-augite-diorite, so that it usually gives rise to bold outcrops and, where large, becomes one of the principal factors in the topography, forming prominent ridges and peaks.

Thickness.

In thickness the McCloud limestone varies from 200 feet or less near the south end, where it appears in small lenses, to approximately 2000 feet in the prominent rugged mountain formed by it a short distance northeast of the United States Fishery.

Relation to Adjacent Formations.

Throughout the greater part of its extent in the Redding quadrangle the McCloud limestone is bounded both east and west by quartz-augite-diorite, but for over two miles south of the Black Diamond mine it lies conformably between the Baird and the Nosoni formation.

Lithologic Character.

The limestone is dark gray and massive below, and lighter colored and somewhat thinner-bedded above, with many nodules and sheets of gray chert, often containing silicified fossils.

Analysis of a sample of limestone from the deposit opposite the United States Fishery, submitted by Mr. E. W. D. Johnson, made by Smith, Emery and Company of San Francisco, is as follows:

	Per cent
Silica (SiO_2)	1.10
Alumina (Al_2O_3)	.24
Iron oxide (Fe_2O_3)	.20
Lime (CaO)	52.16
Magnesia (MgO)	2.38
Loss in ignition	43.96
Total	100.04
Purity as carbonate of lime ($CaCo_3$)	93.2

Possibilities of the Use of the McCloud Limestone for Cement Material.

The largest and most accessible exposures of the McCloud limestone are in Sections 12, 13, 14, 23, and 24, T. 34 N., R. 4 W., M. D. B. and M. In these sections there is an inexhaustible supply of limestone which, due to its low magnesia content, is satisfactory for the manufacture of cement. The prominent rugged mountain, northeast of the United States Fishery, has an elevation of 3114 feet above sea level. The limestone here allows an elevation above the base exposed on the mountain

of over 1600 feet. Where exposed by erosion of a canyon to a depth of 1600 feet on the south end of Sec. 13, the deposit shows a thickness of fully 2000 feet.

Transportation.

These deposits are 2½ miles north of the Sacramento and Eastern Railroad, which crosses the McCloud River at its mouth and continues up the Pit River to the Bully Hill smelter of the Shasta Zinc and Copper Company, at Winthrop, a distance of 17 miles. This railroad connects with the main line of the Southern Pacific four miles below the mouth of the McCloud River. The distance from San Francisco on the main line of the Southern Pacific is 253 miles, to Pit Station, the terminus of the Sacramento and Eastern Railway.

Power.

Hydro-electric power is available from the lines of the Northern California Power Company. The nearest substation is located at Heroult, about three miles south of the property. The published rate for extensive industrial use is about three-fourths of a cent per kilowatt hour.

Shale.

One mile and a half distant from the United States Fishery are large deposits of shale, located on the opposite side of the McCloud River, in section 16, T. 34 N., R. 4 W., about 400 feet above the elevation of the river.

This deposit has been estimated by M. E. Dittmar, to contain approximately 200,000,000 tons of shale, as a cross-section of the erosion shows a thickness of over 300 feet, and average width of half a mile. The state highway crosses the northernly end of the shale deposits.

Analysis of sample from this shale deposit submitted to Smith, Emery and Company of San Francisco, is as follows:

	Per cent
Silica (SiO_2)	37.51
Alumina (Al_2O_3)	19.85
Titanium oxide (Fe_2O_3)	.81
Iron oxide (Fe_2O_3)	8.28
Manganese oxide (Mn_3O_4)	1.34
Lime (CaO)	2.98
Magnesia (MgO)	2.61
Loss in ignition	4.46
Alkalies (by diff.)	3.16
Total	100.00

Conclusions.

These deposits of limestone and shale will furnish an inexhaustible supply of raw material for the manufacture of cement and are situated only a short distance from railroad transportation.

THE PROBLEM OF EXPLOITING THE SMALL MINE AND PROSPECT.

By C. A. LOGAN, Mining Engineer.

A general survey of the district extending from Plumas County on the north through Mariposa County on the south and including the principal mining counties of east-central California, shows that about two-score gold-quartz mines have had individual production records of from a million to several millions of dollars each. Considering the relatively limited scale of operations and the shallow depths reached in most cases, their histories indicate great possibilities for many of those small mines and prospects that now lie idle in the district. Why are so many of these idle? What has been the tendency in recent years of those operators who have been able to command adequate money for mining? Everyone is familiar with the effect of high prices of labor and materials, the resulting high costs of mining, and the business conditions that have attracted money to other fields. At the same time, prosperous companies have been spending a good deal of money in their own way in mine development in California. But while demanding from mining a high prospective yield, they have tried to sidestep as many as possible of the inherent risks of the business. In line with this policy they have set up hard and fast conditions that can not be met by the average small owner and prospector. The following expression by the superintendent of one of these large companies is typical of the attitude taken by many of them:

"Since the owner of the claims mentioned has no records of the past production it would be impossible to interest the company, as they would want to see an assay plan, or mint returns of the gold produced."

The property referred to is a prospect located on one of the strongest vein systems in the state, lying between former good producers, and typical of a great number in the California gold belt. They are really grass-root prospects. Many of them have produced some rich ore at and near the surface, else no attention would ever have been given them. This ore may have been the rich pocket rock characteristic of the surface zones of most of the mines later proven in depth, or it may have been from the stumps of ore shoots mostly removed by erosion. But there has been no accurate and detailed written record kept of the results as work was being done. The prospector is not as a rule a man of literary bent; he writes reluctantly and with difficulty. He relies on human contact. If mining companies will not establish contact with him by sending sympathetic, even if sophisticated, scouts out into the field to meet him and if necessary call his bluff by examining and sampling his claims, the record of his work will be lost with him. With the recent successful development of many California mines at depths of 4000 feet and more, and the light that has been thrown on geology by this deep work, the fissure veins have been proven to be a deep-seated type. There is ample precedent in the success of many companies to justify unproductive sinking for 500 to 1000 feet between ore shoots and by the same token it appears reasonable to prospect undeveloped properties where observable conditions are right. It is not reasonable to think that all ore shoots must outcrop, and as a matter of fact such mines as the Argonaut, South Eureka, Tightner

and others were covered by lava and gravel caps. They would not have been opened had it not been for the information gained in adjacent mines by men of initiative, or as in the case of the Tightner, where the old miners' tales came to the ear of a man who could listen sympathetically and act on what he heard.

The larger companies have lately been doing little real field work or prospecting for new mines in California. A few prospects that have been brought to their attention have been superficially examined, but little money has been spent by them in untried properties. They have devoted their attention chiefly to old mines with notable past production records, as will be borne out by a short summary of the principal activities they have engaged in, at least as concerns operations carried on avowedly for company account. None of the old established companies are known to have brought in a single new notable producing quartz mine in this state, nor to have done any important work in any new or hitherto unimportant district in northern California, for a number of years. Following is a list of the principal properties that have received attention from them:

Plumas County. Philadelphia Exploration Company equipped and unwatered the old Crescent and Green Mountain Mines at Crescent Mills. After extended and expensive exploratory work below the old levels, they quit without milling any ore. No well financed company has done any work lately in the county in gold mining.

Sierra County. Work by the better financed companies has been centered around the mines of the Alleghany district. The Tightner has been put into production again. The records of the Plumbago, Tightner, and 16 to 1 have attracted notice and North Star Mines Company, Tonopah Mining Company and Alleghany Mining Company are engaged in reopening old mines with good past records.

Nevada County. No large company has undertaken the exploration of new property. The Harry Payne Whitney interests have been spending large sums in rehabilitating the Idaho-Maryland group.

Placer and El Dorado Counties. No well financed company has attempted any work of late in these counties, except for one small venture by Metals Exploration Company in eastern Placer. Work started on old properties at Nashville just before the war, was stopped when war was declared, as the capital for this work was coming from England.

Amador County. At present the scene of the principal development of the Mother Lode. The Old Eureka, Plymouth Consolidated and Freemont Mines, all well known past producers, have been reopened.

From the Moore Mine to Carson Hill there has been no recent important development except by a few inadequately financed companies. At Carson Hill and Melones the reopening and further successful exploitation of the Morgan Mine and Melones Mine by Carson Hill Gold Mines, Inc., has kept Calaveras County among the important bullion producers. North Star Mines Company prospected two old properties at West Point in 1921-22 without any production.

Tuolumne County. In contrast to the usual policy of the prosperous companies, Nevada Wonder Mining Company and Tonopah Mining Company have been doing some real prospecting in claims on Jackass Hill and in the Crystalline and Alabama Mines in this county.

If the larger and well financed companies will not hunt for new mines, who will? The field under consideration offers very attractive inducements to stock companies that are honestly conceived and managed and properly financed. A glance at the recent operations of the small, new promotions lately active in the state will indicate that they have not been as successful in contributing to the welfare of the industry as might be desired. Many of them have been based on old mines, and possibly for the same reasons that have actuated the larger companies in devoting so much of their money to this class of property. Astute promoters and engineers admit that it is easier to get money for rehabilitating and further exploring an old mine with a bullion record than it is to interest capital in a new venture. The following are some of the mines recently the subjects of promotion by companies that have put their stock out for sale in small parcels to many buyers, and the present state of these ventures:

Allison Ranch Mine. An expensive mill built before the mine had been adequately explored. Operation suspended after unsuccessful prospecting.

Rising Sun Mine. An expensive mill built before the mine had been unwatered or explored. Operation suspended after a little prospecting, as the funds had been exhausted to pay for surface improvements. No sinking was accomplished.

Patterson Mine. A very complete and quite expensive mill and surface plant were erected prematurely, and before the vein exposed had been properly sampled. Operation was suspended after crushing a few tons of ore which was found to be of unexpectedly low grade, and after an acute shortage of funds developed that had been hastened by heavy expenses on top.

These ventures were all based on old mines with good past records. In each case, too much credence was placed in the belief that good ore was waiting in the bottom to be milled, and the promoters were in such a hurry to begin production that mills were erected before the stories were fully investigated. In many such cases the stockholders themselves are to blame for demanding too early a return on their money, and in many others the trouble is due to insufficient financing, and the idea that the mine must be put into production at the earliest possible time, to pay its way, regardless of whether or not it has been developed to the point where it can sustain the needed output. The mournful monuments of wood and iron standing over so many idle mines, of which the above are merely cited as up-to-date samples, represent many a time enough money to have found good ore, if spent underground. It is poor business in every way to put up a mill before it is needed. While a mine is still unproven, its stock is naturally cheap and hard to sell. Therefore every available dollar should go toward proving ore. If ore is found, the stock at once increases in value and becomes easier to sell. It is never hard to finance mill

building if people can be shown enough ore to justify it, and the mill is not needed in any event until ore is proven, and represents so much capital tied up and unproductive until it can be put in operation. It is safe to say that lack of capital, lack of honesty and poor business judgment are responsible for at least half of the failures of such mining projects to come to a productive stage; few of them ever get sufficient development to show what they can do. The Allison Ranch Mine has been one of the few exceptions, and can be said to have been quite well explored by the last operators. The numerous promotions that have come and gone without contributing to the welfare of anyone except the stock salesman, is in sharp contrast to the few successful operations that have resulted when good business judgment, mining experience and good faith with the buying public have been combined, in charge of the promotion. But most of these have been based on old mines, and it is hard to recall in recent years any important examples of good mines developed from new prospects to important producers in this section of the state, as far as gold quartz mines are concerned. The Morgan Mine on Carson Hill had a record of about $3,000,000 previously to its credit, but had lain idle 20 years when taken over by Wm. J. Loring. No consideration of the mines promotion problem would be complete without citing this successful example of what can be done with California mines if adequately financed and honestly and intelligently developed. There may not be another Morgan Mine in California; it is true that in the early days it produced the largest single piece of pocket gold ever found, worth about $300,000. But there are many mines waiting for development that are well worthy of attention. If the stock buying public could be brought to the point of informing itself a little more fully of the merits of a mine promotion before parting with its money, there would be more dividends and more mine development. If the multitude of mine promotions based on California mines but incorporated in other states, were domestic corporations controlled by a fairly administered law, it would be a help to mining and to the stockholders, but the state law cannot reach beyond the border to prevent misrepresentation of some mines and consequent injury to the whole industry.

Another form of mine exploitation growing out of the desire of the promoter to escape the blue sky law, is the unit plan, which has been tried in a small way during the past year or two. The following are the main points in one of these projects submitted to the public last summer:

Mr. X secured an option to purchase certain claims, and concluded that $25,000 was needed to finance their operation. He thereupon divided the option into 100 interests, or "units," to be sold at $250 each.

On payment of $250 each subscriber was held to be entitled to 1/100 interest (or more, at the same rate) in the option, and in case the option were closed, to a like interest in the property and any production from it.

The price of $7,500 for the property to be paid as follows: $1,000 cash on the subscription and sale of 20 units; $1,500 cash on the subscription and sale of 30 units more; the balance to be paid with 30 units at par, at which time a deed would be given for the property.

No meeting of unit holders, and no provision in any way for their protection, or for safeguarding the funds or directing the spending of same, was provided for until the above 50 units had been sold. The main objection to this plan is that it places too great a responsibility and moral strain upon one man, and there is too much danger of the plan falling through before the unit holders even organize.

On the owner's side, we find in later years that there is an increasing number of absent owners, living in town or perhaps hundreds or thousands of miles away. When a man ceases to be a miner or prospector and leaves his claims because of choice or necessity, the prospective buyer has much less chance to become interested in them. This condition is partly due to the collapse of former mining booms, during which mines and prospects were eagerly bought by non-residents, and partly to the growth of urban life, the removal of successful former mine operators to the cities where they have invested the fortunes gained in mining, in other business, and their children have grown up strangers to the mines.

Summarizing, then, we see that on the one hand we have a number of well financed companies that are interested in finding new mines. They realize that the properties on which their prosperity is based are wasting, and will last only a few years longer in many instances. They have good organizations and wish to continue mining. But they will not as a rule do much prospecting. They want something already brought to the point where there is evidence of a good sized mine in the making. This means at least a few hundred feet of development, with an exposure of ore sufficient to give hope of a good sized ore shoot, and with an assay record properly kept, and that will stand up under re-sampling.

On the other hand are the numerous non-resident owners of mines who are not miners, or for some reason are unable to put their properties in operation.

The situation would seem to call therefore for a class of middlemen to take hold of good prospects and bring them to the point where they are proven valuable or worthless. Properly handled stock companies, organized to develop mines, and with proper technical guidance, can render real service in this direction. The more good prospects that such a company can investigate, the better will be the chance of profit. If one out of four of these prospects makes a mine, the profits from the one property ought easily to care for all expense on the others and give a good net yield besides.

SECRETARY'S OFFICE.

W. W. THAYER, Secretary.

The California State Mining Bureau was created April 16, 1880, by legislative act. In March, 1893, the original act was repealed and an amended act approved and passed by the legislative body. Again on June 16, 1913, a new Mining Bureau Act was approved which became effective August 10, 1913, repealing all former acts, and forming the basic law under which the Bureau now functions.

It is doubtless true that both the mining and lay public have not in the past always recognized the part played by the Bureau in the development of the state's mineral resources. Innumerable inquiries regarding them, originating within and without its borders and in foreign countries, have been answered with ultimate results reflected by a consistent growth in the value of the state's mineral output since the records of production were first compiled by the Bureau in 1887.

It is believed that a better understanding of the economic position occupied by the Bureau will be imparted to the public, whose funds support it, by embodying in the Monthly Chapter a review of the executive activities.

The responsibility for the coordination of effort of each department, to the end that the utmost efficiency may be maintained with the limited and variable appropriations accorded the Bureau by successive legislatures, rests upon the office of Secretary.

Activities referable to that office, such as reports of new maps and publications issued, amount of mail handled, changes and enlargements in offices, changes in personnel of the staff, property and equipment, financial statements, etc., are therefore included herein.

New Publications.

During the month the following Bureau publications have been made available for distribution:

Summary of Operations, California Oil Fields, November, 1922, Vol. 8, No. 5.

Mining in California, November, 1922, (Monthly), Vol. 18, No. 11.

Distribution of Publications.

The Bureau's publications are constantly in demand, requests for copies coming from all over the United States and foreign countries.

Publications were distributed during the month as follows:

Publications	Number Distributed
Report XIV State Mineralogist	3
Report XV State Mineralogist	3
Report XVII State Mineralogist	6
Mines and Mineral Resources of Colusa, etc.	2
Mines and Mineral Resources of Del Norte, etc.	2
Mines and Mineral Resources of Fresno, etc.	2
Mines and Mineral Resources of Imperial, etc.	6
Mines and Mineral Resources of Alpine, etc.	5
Mines and Mineral Resources of Butte, etc.	3
Mines and Mineral Resources of El Dorado, etc.	5

Mines and Mineral Resources of Los Angeles, etc.	5
Mines and Mineral Resources of Monterey, etc.	3
Mines and Mineral Resources of San Bernardino, etc.	1
Mines and Mineral Resources of Nevada County	8
Mines and Mineral Resources of Plumas County	3
Mines and Mineral Resources of Sierra County	4
Bulletin No. 6, California Gold Mill Practices	1
Bulletin No. 37, Gems, Jewelers Materials, Ornamental Stones of California	6
Bulletin No. 50, Copper Resources of Cailfornia (revised)	1
Bulletin No. 72, Geologic Formations of California	5
Bulletin No. 75, United States and California Mining Laws	9
Bulletin No. 76, Mangaense and Chromium in California	1
Bulletin No. 78, Quicksilver Resources of California	5
Bulletin No. 85, Platinum Resources of California	61
Bulletin No. 89, Petroleum Resources of California with special reference to unproved areas	58
Bulletin No. 90, California Mineral Production for 1920, with County Maps	23
Mining in California (Monthly) Vol. 18 No. 10, October, 1922	75
Summary of Operations, California Oil Fields (Monthly) Vol. 8, No. 4, October, 1922	2875
County Maps and Registers of Mines	5
Copper Deposit Map	4
Inyo County Geological Map	1
Minaret Map	1
Tuolumne County Mineral Map	1
Geological Map of California, mounted	14
Lake County Map	1
Oil Field Maps	425
Map accompanying Buelltin 89	62

Mails and Files.

The Bureau maintains in addition to its correspondence file a mine report file, which includes reports on some 7500 mines and mineral properties in California. Also, there is available to the public a file of the permits granted to mining and oil corporations by the State Commissioner of Corporations.

During the month 938 letters were received and answered. They are practically all requests for information and the inquiries cover all phases of prospecting, mining and developing mineral deposits, reduction of crude minerals and marketing of refined products.

Drafting Room.

The Bureau maintains an up-to-date drafting department, where topographic and geological maps, tracings, oil well logs, and oil field maps are prepared.

DIVISION OF MINERALS AND STATISTICS.

Statistics, Museum, Laboratory.

WALTER W. BRADLEY, Statistician and Curator.

STATISTICS.

California produces commercially at least fifty different mineral substances, with a total annual value averaging in recent years in excess of $250,000,000. There are several thousand operating properties, including mines, quarries, oil and gas wells, mineral springs, gravel pits, mills, and smelters. The task of compiling accurate and dependable statistics covering their activities is a difficult one, requiring care and a technical knowledge of properties and processes.

Since the inauguration of the Monthly Chapter, it is possible to publish the production figures for any mineral within a maximum period of thirty days from the date on which returns are complete. It is hoped that the early appearance of the figures for some of the minerals will induce other operators to cooperate, to the end that the complete statistical bulletin may be incorporated in one of the early mid-year issues of the Chapter. Blank forms were sent out in January, and the 1922 data are now coming to hand, so that we hope to be in a position to give some of the figures in the March issue.

MUSEUM.

The Museum of the State Mining Bureau possesses an exceptionally fine collection of rocks and minerals of both economic and academic value. It ranks among the first five of such collections located in North America, and contains not only one or more samples of most of the known minerals found in California, but many specimens from other states and foreign countries as well.

Mineral specimens suitable for exhibit purposes are solicited, and their donation will be appreciated by the State Mining Bureau as well as by those who utilize the facilities of the collection. The Bureau supplies a set of forty typical minerals and ores, appropriately labeled, for study purposes to any public school in the state upon request. During the past 30 days, a total of 475 visitors signed their names to the Museum register, and in addition there are many others daily who fail to take note of our request for their signatures.

LABORATORY.

FRANK SANBORN, Petrologist.

A sample of allanite, a complex silicate containing some of the rare earth metals, was one of the 216 samples received during the thirty-day period covered by this report. This is the second sample of allanite from a California locality received at this laboratory during the past year.

A list of the samples having a possible commercial value, judged from the sample submitted only, is appended:

15–15 Phosphate of lime; also turquoise.
15–16 Psilomelane (manganese ore).
15–17 Gypsum.

15–18 Red Rock; suitable for stucco "dash."
15–19 Limestone; also volcanic ash.
15–20 Aresnopyrite.
15–21 Barite.
15–22 Silver-cobalt ore, nickel and copper present.
15–23 Garnet.
15–24 Altered material; contains silica, lime, phosphate, and fluoride.
15–25 Gold-copper ore.
15–26 Clay.
15–27 Silver ore; contains some gold.
15–28 Silver ore; also marble.
15–29 Gypsum.
15–30 Silver ore; very high grade.
15–31 Malachite (copper carbonate).

LIBRARY.

E. Cooney, Librarian.

In addition to the numerous standard works, authoritative information on many phases of the mining and mineral industry is constantly being issued in the form of reports and bulletins by various government agencies.

The library of the State Mining Bureau contains some five thousand selected volumes on mines, mining and allied subjects, and it is also a repository for reports and bulletins of the technical departments of federal and state governments and of educational institutions, both domestic and foreign.

It is not the dearth of the latter publications, but rather a lack of knowledge of just what has been published and where the reports may be consulted or obtained, that embarrasses the ordinary person seeking specific information.

To assist in making the public acquainted with this valuable source of current technical information, 'Mining in California' contains under this heading a list of all books and official reports and bulletins received during the month, with names of publishers or issuing departments.

Files of all the leading technical journals will be found in the library, and county and state maps, topographical sheets and geological folios. Current copies of local newspapers published in the mining centers of the State are available for reference.

The library and reading room are open to the public during the usual office hours, when the librarian may be freely called upon for all necessary assistance.

OFFICIAL PUBLICATIONS RECEIVED.

Governmental.

U. S. Geol. Survey:

Bulletin 725—Contributions to Economic Geology, 1921. Part I, Metals and Nonmetals Except Fuels. By F. L. Ransome and E. F. Burchard, Geologists in Charge.

Bulletin 726—Contributions to Economic Geology, 1921. Part II, Mineral Fuels. By David White and M. R. Campbell, Geologists in Charge.

Bulletin 727—Potash in the Greensands of New Jersey. By George Rogers Mansfield.

Bulletin 739-B—Mineral Deposits of the Wrangell District, Southeastern Alaska. By A. F. Buddington.

Bulletin 739-C—Recent Investigations of Petroleum in Alaska (Cold Bay, Iniskin Bay, Anchorage, Nenana Coal Field). Papers by S. R. Capps, F. H. Moffit, A. H. Brooks and G. C. Martin.

Gold and Silver in 1921. By J. P. Dunlop.

Stone in 1921. By G. F. Loughlin and A. T. Coons.

Natural-Gas, Gasoline in 1921. By E. G. Sievers.

Prof. Paper 122—Copper Deposits of the Tryone District, New Mexico. By Sidney Paige.

Water Supply Paper 479—Surface Water Supply of the United States, 1918. Part IX, Colorado River Basin. By Nathan C. Grover and Others.

U. S. Bureau of Mines: Reports of Investigations—

Serial No. 2419—Regulations Safeguarding Coal-Cutting Machines. By L. C. Ilsley (Electrical Engineer, U.S.B.M.).

Serial No. 2420—Experiments on Back Pressure on Oil Wells. By T. E. Swigart (Supt., Petroleum Experiment Station, U.S.B.M., Bartlesville, Okla.).

Serial No. 2421—Natural Gas as a Factor in Oil Migration and Accumulation in the Vicinity of Faults. By R. Van A. Mills (Pet. Technologist, U.S.B.M.).

Serial No. 2422—The Explosibility of Methane-Air and Gasoline-Air Mixtures as Related to the Design of Explosion-Proof Electric Motors. By E. J. Gleim (Associate Electrical Engineer, U.S.B.M.).

Serial No. 2423—Explosives Used in October, 1922. By W. W. Adams (Statistician, U.S.B.M.).

Serial No. 2424—Use of the Churn Drill at Lime-Plant Quarries. By Oliver Bowles (Mineral Technologist, U.S.B.M.).

Serial No. 2425—A Section Through the New Albany Shale. By John R. Reeves.

Serial No. 2426—Fire and Ventilation Doors in Metal Mines. By D. Harrington (Supervising Mining Engineer, B.M.).

Serial No. 2427—Rock Strata Gases in Mines of a Nevada Mining District. By E. D. Gardner (Mining Engineer, U.S.B.M.)

Serial No. 2428—Coal Mine Fatalities in November, 1922. By W. W. Adams (Statistician U.S.B.M.).

Bulletin 201—Prospecting and Testing for Oil and Gas. By R. E. Collom.

Bulletin 202—Electric Brass-Furnace Practice. By H. W. Gillett and E. L. Mack.

Bulletin 218—The Technology of Slate. By Oliver Bowles.

Tech. Paper 279—Economic Combustion of Waste Fuels. By David Moffat Myers.

Tech. Paper 287—Preparation of Light Aluminum-Copper Casting Alloys. By R. J. Anderson.

Tech. Paper 325—Natural Gas Manual for the Home. By R. A. Cattell.

Circular 80, Bureau of Standards—Protective Metallic Coating for the Rust-proofing of Iron and Steel.

Circular No. 135, Bureau of Standards—Caustic Magnesia Cement.

Second Annual Report of the Federal Power Commission, 1922.

Annual Report of the Chief of Engineers U. S. Army, Parts I and II. 1922.

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Memoir 132—Geology and Ore Deposits of Salmon River District, British Columbia. By S. J. Schofield and G. Hanson.

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Secretaria de Industria, Comercio y Trabajo. Boletin Minero, Tomo XIV, Numero I; Julio de 1922. Mexico.

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Bulletin No. 55—Coal Beds in Beaver County, Pa. By J. D. Sisler.

Bulletin No. 58—Potash Fiasco in Tioga County, Pa. By R. W. Stone, and Simple Tests for Potash. By W. B. Hicks.

Bulletin No. 59—Bog-Iron Ore. By J. Ross Corbin.
Bulletin No. 60—Geologic Structure of the Pittsburgh Quadrangle, Pa. By M. E. Johnson.
Thirty-second Report of the State Mine Inspector for the State of South Dakota.
Annual Report fo the State Geologist of South Dakota, 1920-1922.
Circular No. 9—The Possibilities of Oil in Western Dewey County. By Freeman Ward and Roy A. Wilson.
Bulletin No. 2—The Geology of a Portion of the Badlands. By Freeman Ward.
State of Washington, Division of Geology, Bulletin No. 27—Iron Ores, Fuels and Fluxes of Washington. By Solon Shedd, Olaf P. Jenkins, Herschel H. Cooper.

Societies and Educational Institutions.

University of California Publications. Department of Geological Sciences. Vol. 13, No. 9—Geology of the San Bernardino Mountains North of San Gorgonio Pass. By Francis Edward Vaughan.
Bulletins of the University of Kansas—Science Bulletins. Vol. XIII, Nos. 10, 11, 12, 13, 14 and 15.
Occasional Papers of the California Academy of Sciences. X—The Reptiles of Western North America. By John Van Denburgh.
Proceedings of the California Academy of Sciences, Fourth Series—Vol. XII, No. 1—The Work Among the Birds and Mammals of the Northern Coast of California in 1921. By Joseph Mailliard.
Vol. XII, No. 2—New Species of Hynobius from Japan. By E. R. Dunn.
Vol. XII, No. 3—Upper Niocene Lacustrine Mollusks from Sonoma County, California. By G. Dallas Hanna.
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American Petroleum Institute. Vol. III, No. 62; December 30, 1922.
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The American Mineralogist. December, 1922.
The Philippine Journal of Science. December, 1922.
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Journal of the American Peat Society. January, 1923.
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Proceedings of the Engineers' Society of Western Pennsylvania. November, 1922.
Economic Geology. January and February, 1923.
Transactions of the Institution of Mining and Metallurgy, Thirtieth Session; 1920.
The Journal of Geology. January and February, 1923.
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Maps.

U. S. Geological Survey Topographical Sheets:

Altoona, Pennsylvania.
Big Lake, Texas.
Chaney Ranch, California.
Childwold, New York.
Colockum Pass, Washington.
Conejos, Colorado.
Donegal, Pennsylvania.
Dos Palos, California.
Durand, Michigan.
Flint, Michigan.
Friant, California.
Hanover, Pennsylvania.
Harlem, Georgia.
Kerman, California.
Paradox Valley, Colorado.
Parks Bar, California.
Pozo, California.
Schoolcraft, Michigan.
Tufts Ranch, California.
Bullard, California.
Levis, California.
Mendota, California.
Clovis, California.
Herndon, California.
Malaga, California.
Reedley, California.
Englebrecht Ranch, California.
Stokes Mountain, California.
Tumey Hills, California.
Monocline Ridge, California.
Squaw Valley, California.
Sultana, California.
Wahtoke, California.

Current Magazines on File.

For the convenience of persons wishing to consult the technical magazines in the reading room, a list of those on file is appended:

Architect and Engineer, San Francisco.
Arizona Mining Journal, Phoenix, Arizona.
Asbestos, Philadelphia, Pennsylvania.
American Petroleum Institute, New York.
Brick and Clay Record, Chicago.
Cement, Mill and Quarry, Chicago, Illinois.
Chemical Engineering and Mining Review, London, England.
Engineering and Mining Journal-Press, New York.
Financial Insurance News, Los Angeles, California.
Hercules Mixer, Washington, Delaware.
Journal of Electricity and Western Industry, San Francisco.
Metallurgical and Chemical Engineering, New York.
Mining and Oil Bulletin, Los Angeles.
Mining and Engineering Record, Vancouver, B. C.
Oildom, New York.
Oil Weekly, Houston, Texas.
Oil and Gas Journal, Tulsa, Oklahoma.
Oil, Paint and Drug Reporter, New York.
Oil Trade Journal, New York.
Oil Age, Los Angeles.
Oil News, Galesburg, Illinois.
Petroleum Record, Los Angeles.
Petroleum Refiner, Kansas City, Missouri.
Petroleum Age, New York.
Petroleum World, Los Angeles.
Queensland Government Mining Journal, Brisbane, Australia.
Rock Products, Chicago, Illinois.
Southwest Builder and Contractor, Los Angeles.
Stone, New York.
Salt Lake Mining Review, Salt Lake City, Utah.
Standard Oil Bulletin, San Francisco.
Safety News, Industrial Accident Commission, San Francisco.
The Record, Associated Oil Company, San Francisco.

Newspapers.

The following papers are received and kept on file in the library:

Amador Dispatch, Jackson, Cal.
Arkansas Oil and Mineral News, Hot Springs National Park (Arkansas).
Bakersfield Morning Echo, Bakersfield, Cal.
Blythe Herald, Blythe, Cal.
Bridgeport-Chronicle-Union, Bridgeport, Mono Co., Cal.
California Oil World, Los Angeles, Cal.
Colusa Daily Sun, Colusa, Cal.
Daily Midway Driller, Taft, Cal.
Del Norte Triplicate, Crescent City, Cal.
Exeter Sun, Exeter, Cal.
Georgetown Gazette, Georgetown, Cal.
Gateway Gazette, Beaumont, Cal.
Gilroy Gazette, Gilroy, Cal.
Goldfield News, Goldfield, Nevada.
Guerneville Times, Guerneville, Cal.
Humboldt Standard, Eureka, Cal.
Healdsburg Enterprise, Healdsburg, Cal.
Inyo Independent, Independence, Cal.
Inyo Register, Bishop, Cal.
Lake County Bee, Lakeport, Cal.
Mariposa Gazette, Mariposa, Cal.

Mining and Financial Record, Denver, Colo.
Mountain Democrat, Placerville, Cal.
Mountain Messenger, Downieville, Cal.
Nevada Mining Press, Reno, Nevada.
Oroville Daily Register, Oroville, Cal.
Oatman Mining Press, Oatman, Arizona.
Oregon Observer, Grants Pass, Oregon.
Petroleum Reporter, Etna Mills, Cal.
Plumas National Bulletin, Quincy, Cal.
Plumas Independent, Quincy, Cal.
Placer Herald, Auburn, Cal.
Sacramento Union, Sacramento, Cal.
San Diego News, San Diego, Cal.
Santa Barbara Daily News, Santa Barbara, Cal.
Shasta Courier, Redding, Cal.
Siskiyou News, Yreka, Cal.
Siskiyou Standard, Fort Jones, Cal.
Stockton Record, Stockton, Cal.
Sunset Journal, Sunset District, San Francisco, Cal.
Tuolumne Prospector, Tuolumne, Cal.
Ventura Daily Post, Ventura, Cal.
Weekly Trinity Journal, Weaverville, Cal.
Western Sentinel, Etna Mills, Cal.

PRODUCERS AND CONSUMERS.

The producer and consumer of mineral products are mutually dependent upon each other for their prosperity, and one of the most direct aids rendered by the Bureau to the mining industry in the past has been that of bringing producers and consumers into direct touch with each other.

This work has been carried on largely by correspondence, supplemented by personal consultation. Lists of consumers of all the commercial minerals produced in California have been made available to producers upon request, and likewise the owners of undeveloped deposits of various minerals, and producers of them, have been made known to those looking for raw mineral products.

Sufficient publicity has not heretofore been given to this feature of the Bureau's work, but in 'Mining in California,' a suitable medium is provided for current inquiries of this nature, and, therefore, written or verbal inquiries that come to the attention of the Bureau are summarized in each issue.

The name of the product wanted or offered, only, is published; the name of the owner of the deposit, or buyer, and other details being supplied upon request.

In writing, the reference number of the item should be given.

Mineral Products or Deposits for Sale.

12-14 Limestone; eighty acres in Santa Clara County, ten miles from railroad.
12-15 High-grade limestone and marble deposit in Siskiyou County, four miles from Southern Pacific Railroad.
12-16 Feldspar; Tulare County.
12-17 Feldspar deposit; very large; in Kern County, 2½ miles from Southern Pacific Railroad.
12-18 Limestone deposits in Orange, Kern, San Bernardino, and Siskiyou counties.
12-19 Scheelite.
12-20 Flourspar; tonnage.
12-21 Diatomaceous earth in Monterey County, 4½ miles from railroad.
12-22 Montmorillonite or "rock soap".
12-23 Sericite-schist (talcose).

Mineral Products or Deposits Wanted.

13-14 Lump pumice; 1-in. to 1½-in. lumps and up.
13-15 Radio pyrite.
13-16 Arsenopyrite ore.
13-17 Witherite (barium carbonate).
13-18 Workable quality of slate; deposit.
13-19 High colloidal clay.
13-20 Colemanite; tonnage or deposit.
13-21 All minerals excepting gold and silver; especially non-metallics.
13-22 Magnesite; high-grade; tonnage or deposit.

EMPLOYMENT SERVICE.

Following the establishment of the Mining Division branch offices in 1919, a free technical employment service was offered as a mutual aid to mine operators and technical men for the general benefit of the mineral industry.

Briefly summarized, men desiring positions are registered, the cards containing an outline of the applicant's qualifications, position wanted, salary desired, etc., and as notices of 'positions open' are received, the names and addresses of all applicants deemed qualified are sent to the prospective employer for direct negotiations.

Telephone and telegraphic communications are also given immediate attention.

The Bureau registers technical men, or those qualified for supervisory positions, and vacancies of like nature, only, as no attempt will be made to supply common mine and mill labor.

A list of applicants for positions and 'positions open,' received by the Bureau during each 30-day period preceding the date of publication of the Monthly Chapter is carried in each issue.

Each notice is designated by a key number, and communications sent to the Bureau in reply to any notice will be forwarded to the proper party without delay or charge of any kind. If desired, recommendations may be filed with an application, but copies only should be sent to the Bureau, to avoid possible loss.

Registration cards for the use of both prospective employers and employees may be obtained at any office of the Bureau upon request, and a cordial invitation is extended to the industry to make free use of the facilities afforded.

POSITIONS WANTED.

11-5 Electrical or mechanical engineer. Five and one-half years' experience as draftsman, assistant engineer, and engineer in Boston, Seattle, and San Francisco. One and one-half years in the air service, U. S. Army. Age 29. Married. References. Salary wanted, $225.

11-6 Civil or mining engineer. Fifteen years' engineering experience in coal mining, oil fields, railroad and building construction. Age 36; single. Salary open.

11-7 Mining engineer or assistant. Four and one-half years' experience mining and geology in Alaska and Idaho and as metallurgist at electric smelter, Tacoma. Age 28; single. References. Salary open.

PUBLICATIONS OF THE CALIFORNIA STATE MINING BUREAU.

During the past forty-two years, in carrying out the provisions of the organic act creating the California State Mining Bureau, there have been published many reports, bulletins and maps which go to make up a library of detailed information on the mineral industry of the state, a large part of which could not be duplicated from any other source.

One feature that has added to the popularity of the publications is that many of them have been distributed without cost to the public, and even the more elaborate ones have been sold at a price which barely covers the cost of printing.

Owing to the fact that funds for the advancing of the work of this department have often been limited, many of the reports and bulletins mentioned were printed in limited editions which are now entirely exhausted.

Copies of such publications are available, however, in the Bureau's offices in the Ferry Building, San Francisco; Pacific Finance Building, Los Angeles; in Santa Maria; Santa Paula; Coalinga; Taft; Bakersfield; Auburn, and Redding. They may also be found in many public, private and technical libraries in California and other states, and foreign countries.

A catalog of all publications of the Bureau, from 1880 to 1917, giving a synopsis of their contents, is issued as Bulletin No. 77.

Publications in stock may be obtained by addressing any of the offices of the State Mining Bureau and enclosing the requisite amount in the case of publications that have a list price. The Bureau is authorized to receive only coin, stamps or money orders, and it will be appreciated if remittance is made in this manner rather than by personal check.

The prices noted include delivery charges to all parts of the United States. Money orders should be made payable to the State Mining Bureau.

REPORTS.

Asterisks (**) indicate the publication is out of print.

	Price
**First Annual Report of the State Mineralogist, 1880, 43 pp. Henry G. Hanks	----
**Second Annual Report of the State Mineralogist, 1882, 514 pp., 4 illustrations, 1 map. Henry G. Hanks	----
**Third Annual Report of the State Mineralogist, 1883, 111 pp., 21 illustrations. Henry G. Hanks	----
**Fourth Annual Report of the State Mineralogist, 1884, 410 pp., 7 illustrations. Henry G. Hanks	----
**Fifth Annual Report of the State Mineralogist, 1885, 234 pp., 15 illustrations, 1 geological map. Henry G. Hanks	----
**Sixth Annual Report of the State Mineralogist, Part I, 1886, 145 pp., 3 illustrations, 1 map. By Henry G. Hanks	----
**Part II, 1887, 222 pp., 36 illustrations. William Irelan, Jr.	----
**Seventh Annual Report of the State Mineralogist, 1887, 315 pp. William Irelan, Jr.	----
**Eighth Annual Report of the State Mineralogist, 1888, 948 pp., 122 illustrations. William Irelan, Jr.	----
**Ninth Annual Report of the State Mineralogist, 1889, 352 pp., 57 illustrations, 2 maps. William Irelan, Jr.	----
**Tenth Annual Report of the State Mineralogist, 1890, 983 pp., 179 illustrations, 10 maps. William Irelan, Jr.	----
Eleventh Report (First Biennial) of the State Mineralogist, for the two years ending September 15, 1892, 612 pp., 73 illustrations, 4 maps. William Irelan, Jr.	$1.00
**Twelfth Report (Second Biennial) of the State Mineralogist, for the two years ending September 15, 1894, 541 pp., 101 illustrations, 5 maps. J. J. Crawford	----
**Thirteenth Report (Third Biennial) of the State Mineralogist, for the two years ending September 15, 1896, 726 pp., 93 illustrations, 1 map. J. J. Crawford	----
Chapters of the State Mineralogist's Report, Biennial Period, 1913-1914. Fletcher Hamilton:	
**Mines and Mineral Resources, Amador, Calaveras and Tuolumne Counties, 172 pp., paper	----
Mines and Mineral Resources, Colusa, Glenn, Lake, Marin, Napa, Solano, Sonoma and Yolo Counties, 208 pp., paper	.50
Mines and Mineral Resources, Del Norte, Humboldt, and Mendocino Counties, 59 pp., paper	.25
Mines and Mineral Resources, Fresno, Kern, Kings, Madera, Mariposa, Merced, San Joaquin and Stanislaus Counties, 220 pp., paper	.50
Mines and Mineral Resources of Imperial and San Diego Counties, 113 pp., paper	.35
**Mines and Mineral Resources, Shasta, Siskiyou and Trinity Counties, 180 pp., paper	----
Fourteenth Report of the State Mineralogist, for the Biennial Period 1913-1914, Fletcher Hamilton, 1915:	
A General Report on the Mines and Mineral Resources of Amador, Calaveras, Tuolumne, Colusa, Glenn, Lake, Marin, Napa, Solano, Sonoma, Yolo, Del Norte, Humboldt, Mendocino, Fresno, Kern, Kings, Madera, Mariposa, Merced, San Joaquin, Stanislaus, San Diego, Imperial, Shasta, Siskiyou, and Trinity Counties, 974 pp., 275 illustrations, cloth	$2.00
Chapters of the State Mineralogist's Report, Biennial Period, 1915-1916. Fletcher Hamilton:	
Mines and Mineral Resources, Alpine, Inyo and Mono Counties, 176 pp., paper	.65
Same, including geological map of Inyo County	1.25
Mines and Mineral Resources, Butte, Lassen, Modoc, Sutter, and Tehama Counties, 91 pp., paper	.50
Mines and Mineral Resources, El Dorado, Placer, Sacramento, and Yuba Counties, 198 pp., paper	.65

REPORTS—Continued.

Asterisks (**) indicate the publication is out of print.

	Price
Mines and Mineral Resources, Los Angeles, Orange, and Riverside Counties. 136 pp., paper	$0.50
Mines and Mineral Resources, Monterey, San Benito, San Luis Obispo, Santa Barbara, and Ventura Counties, 183 pp., paper	.65
Mines and Mineral Resources, San Bernardino and Tulare Counties, 186 pp., paper	.65
Fifteenth Report of the State Mineralogist, for the Biennial Period 1915-1916, Fletcher Hamilton, 1917:	
A general Report on the Mines and Mineral Resources of Alpine, Inyo, Mono, Butte, Lassen, Modoc, Sutter, Tehama, Placer, Sacramento, Yuba, Los Angeles, Orange, Riverside, San Benito, San Luis Obispo, Santa Barbara, Ventura, San Bernardino and Tulare Counties, 990 pp., 413 illustrations, cloth	3.75
Chapters of the State Mineralogist's Report, Biennial Period 1917-1918, Fletcher Hamilton:	
Mines and Mineral Resources of Nevada County, 270 pp., paper	.75
Mines and Mineral Resources of Plumas County, 188 pp., paper	.50
Mines and Mineral Resources of Sierra County, 144 pp., paper	.50
Seventeenth Report of the State Mineralogist, 1920, Mining in California During 1920, Fletcher Hamilton; 562 pp., 71 illustrations, cloth	1.75
Eighteenth Report of the State Mineralogist, 1922, Mining in California, Fletcher Hamilton. Chapters published monthly beginning with January, 1922:	
**January, **February, March, April, May, June, July, August, September, October, November, December, 1922	Free
Chapters of State Oil and Gas Supervisor's Report:	
Summary of Operations—California Oil Fields, July, 1918, to March, 1919 (one volume)	Free
Summary of Operations—California Oil Fields. Published monthly, beginning April, 1919:	
**April, **May, June, **July, **August, **September, **October, November, December, 1919	Free
January, February, March, April, May, June, July, **August, September, October, November, December, 1920	Free
January, February, March, April, May, June, **July, August, **September, **October, **November, December, 1921	Free
January, February, March, April, May, June, July, August, September, October, November, December, 1922	Free

BULLETINS.

	Price
**Bulletin No. 1. A Description of Some Desiccated Human Remains, by Winslow Anderson. 1888, 41 pp., 6 illustrations	----
**Bulletin No. 2. Methods of Mine Timbering, by W. H. Storms. 1894, 58 pp., 75 illustrations	----
**Bulletin No. 3. Gas and Petroleum Yielding Formations of Central Valley of California, by W. L. Watts. 1894, 100 pp., 13 illustrations, 4 maps	----
**Bulletin No. 4. Catalogue of Californian Fossils, by J. G. Cooper. 1894, 73 pp., 67 illustrations. (Part I was published in the Seventh Annual Report of the State Mineralogist, 1887.)	----
**Bulletin No. 5. The Cyanide Process, 1894, by Dr. A. Scheidel. 140 pp., 46 illustrations	----
Bulletin No. 6. California Gold Mill Practices, 1895, by E. B. Preston, 85 pp., 46 illustrations	.50
**Bulletin No. 7. Mineral Production of California, by Counties for the year 1894, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 8. Mineral Production of California, by Counties for the year 1895, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 9. Mine Drainage, pumps, etc., by Hans C. Behr. 1896, 210 pp., 206 illustrations	----

BULLETINS—Continued.

Asterisks (**) indicate the publication is out of print.

	Price
**Bulletin No. 10. A bibliography Relating to the Geology, Palæntology and Mineral Resources of California, by Anthony W. Vogdes. 1896, 121 pp.	----
**Bulletin No. 11. Oil and Gas Yielding Formations of Los Angeles, Ventura and Santa Barbara counties, by W. L. Watts. 1897, 94 pp., 6 maps, 31 illustrations	----
**Bulletin No. 12. Mineral Production of California, by Counties for 1896, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 13. Mineral Production of California, by Counties for 1897, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 14. Mineral Production of California, by Counties for 1898, by Charles G. Yale	----
**Bulletin No. 15. Map of Oil City Fields, Fresno County, by John H. Means. 1899.	----
**Bulletin No. 16. The Genesis of Petroleum and Asphaltum in California, by A. S. Cooper. 1899, 39 pp., 29 illustrations	----
**Bulletin No. 17. Mineral Production of California, by Counties for 1899, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 18. Mother Lode Region of California, by W. H. Storms. 1900, 154 pp., 49 illustrations	----
**Bulletin No. 19. Oil and Gas Yielding Formations of California, by W. L. Watts. 1900, 236 pp., 60 illustrations, 8 maps	----
**Bulletin No. 20. Synopsis of General Report of State Mining Bureau, by W. L. Watts. 1901, 21 pp. This bulletin contains a brief statement of the progress of the mineral industry in California for the four years ending December, 1899	----
**Bulletin No. 21. Mineral Production of California by Counties, by Charles G. Yale. 1900. Tabulated sheet	----
**Bulletin No. 22. Mineral Production of California for Fourteen Years, by Charles G. Yale. 1900. Tabulated sheet	----
Bulletin No. 23. The Copper Resources of California, by P. C. DuBois, F. M. Anderson, J. H. Tibbits and G. A. Tweedy. 1902, 282 pp., 69 illustrations, and 9 maps	$0.50
**Bulletin No. 24. The Saline Deposits of California, by G. E. Bailey. 1902, 216 pp., 99 illustrations, 5 maps	----
**Bulletin No. 25. Mineral Production of California, by Counties, for 1901, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 26. Mineral Production of California for the past Fifteen Years, by Charles G. Yale. 1902. Tabulated sheet	----
**Bulletin No. 27. The Quicksilver Resources of California, by William Forstner. 1903, 273 pp., 144 illustrations, 8 maps	----
**Bulletin No. 28. Mineral Production of California, for 1902, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 29. Mineral Production of California for Sixteen Years, by Charles G. Yale. 1903. Tabulated sheet	----
**Bulletin No. 30. Bibliography Relating to the Geology, Palæntology, and Mineral Resources of California, by A. W. Vogdes. 1903. 290 pp.	----
**Bulletin No. 31. Chemical Analyses of California Petroleum, by H. N. Cooper. 1904. Tabulated sheet	----
**Bulletin No. 32. Production and Use of Petroleum in California, by Paul W. Prutzman. 1904, 230 pp., 116 illustrations, 14 maps	----
**Bulletin No. 33. Mineral Production of California, by Counties, for 1903, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 34. Mineral Production of California for Seventeen Years, by Charles G. Yale. 1904. Tabulated sheet	----
**Bulletin No. 35. Mines and Minerals of California, by Charles G. Yale. 1904, 55 pp., 20 county maps. Relief map of California	----
**Bulletin No. 36. Gold Dredging in California, by J. E. Doolittle. 1905, 120 pp., 66 illustrations, 3 maps	----
Bulletin No. 37. Gems, Jewelers' Materials, and Ornamental Stones of California, by George F. Kuntz. 1905, 168 pp., 54 illustrations	.25

BULLETINS—Continued.

Asterisks (**) indicate the publication is out of print.

	Price
**Bulletin No. 38. Structural and Industrial Materials of California, by Wm. Forstner, T. C. Hopkins, C. Naramore and L. H. Eddy. 1906, 412 pp., 150 illustrations, 1 map	----
**Bulletin No. 39. Mineral Production of California, by Counties, for 1904, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 40. Mineral Production of California for Eighteen Years, by Charles G. Yale. 1905. Tabulated sheet	----
**Bulletin No. 41. Mines and Minerals of California, for 1904, by Charles G. Yale. 1905, 54 pp., 20 county maps	----
**Bulletin No. 42. Mineral Production of California, by Counties, 1905, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 43. Mineral Production of California for Nineteen Years, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 44. California Mines and Minerals for 1905, by Charles G. Yale. 1907, 31 pp., 20 county maps	----
**Bulletin No. 45. Auriferous Black Sands of California, by J. A. Edman. 1907, 10 pp.	----
Bulletin No. 46. General Index of Publications of the California State Mining Bureau, by Charles G. Yale. 1907, 54 pp.	$0.30
**Bulletin No. 47. Mineral Production of California, by Counties, 1906, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 48. Mineral Production of California for Twenty Years, 1906, by Charles G. Yale	----
**Bulletin No. 49. Mines and Minerals of California for 1906, by Charles G. Yale. 34 pp.	----
Bulletin No. 50. The Copper Resources of California, 1908, by A. Hausmann, J. Kruttschnitt, Jr., W. E. Thorne and J. A. Edman, 366 pp., 74 illustrations. (Revised edition.)	1.00
**Bulletin No. 51. Mineral Production of California, by Counties, 1907, by D. H. Walker. Tabulated sheet	----
**Bulletin No. 52. Mineral Production of California for Twenty-one Years, 1907, by D. H. Walker. Tabulated sheet	----
**Bulletin No. 53. Mineral Production of California for 1907, with County Maps, by D. H. Walker, 62 pp.	----
**Bulletin No. 54. Mineral Production of California, by Counties, by D. H. Walker, 1908. Tabulated sheet	----
**Bulletin No. 55. Mineral Production of California for Twenty-two Years, by D. H. Walker, 1908. Tabulated sheet	----
**Bulletin No. 56. Mineral Production for 1908, with County Maps and Mining Laws of California, by H. D. Walker. 78 pp.	----
**Bulletin No. 57. Gold Dredging in California, by W. B. Winston and Chas. Janin. 1910, 312 pp., 239 illustrations and 10 maps	----
**Bulletin No. 58. Mineral Production of California, by Counties, by D. H. Walker, 1909. Tabulated sheet	----
**Bulletin No. 59. Mineral Production of California for Twenty-three Years, by D. H. Walker, 1909. Tabulated sheet	----
**Bulletin No. 60. Mineral Production for 1909, County Maps and Mining Laws of California, by D. H. Walker. 94 pp.	----
**Bulletin No. 61. Mineral Production of California, by Counties for 1910, by D. H. Walker. Tabulated sheet	----
**Bulletin No. 62. Mineral Production of California for Twenty-four Years, by D. H. Walker, 1910. Tabulated sheet	----
**Bulletin No. 63. Petroleum in Southern California, by P. W. Prutzman. 1912, 430 pp., 41 illustrations, 6 maps	----
**Bulletin No. 64. Mineral Production for 1911, by E. S. Boalich. 49 pp.	----
**Bulletin No. 65. Mineral Production for 1912, by E. S. Boalich. 64 pp.	----
**Bulletin No. 66. Mining Laws of the United States and California. 1914. 89 pp.	----
**Bulletin No. 67. Minerals of California, by Arthur S. Eakle. 1914. 226 pp.	----
**Bulletin No. 68. Mineral Production for 1913, with County Maps and Mining Laws, by E. S. Boalich. 160 pp.	----

BULLETINS—Continued.

Asterisks (**) indicate the publication is out of print.

	Price
**Bulletin No. 69. Petroleum Industry of California, with Folio of Maps (18 by 22), by R. P. McLaughlin and C. A. Waring. 1914, 519 pp., 13 illustrations, 83 figs. [18 plates in accompanying folio.]	----
**Bulletin No. 70. Mineral Production for 1914, with County Maps and Mining Laws. 184 pp.	----
**Bulletin No. 71. Mineral Production for 1915, with County Maps and Mining Laws, by Walter W. Bradley. 193 pp., 4 illustrations	----
Bulletin No. 72. The Geologic Formations of California, with Reconnaissance Geologic Map, by James Perrin Smith. 1916, 47 pp.	$0.25
**Bulletin No. 73. First Annual Report of the State Oil and Gas Supervisor of California, for the fiscal year 1915-16, by R. P. McLaughlin. 278 pp., 26 illustrations	----
Bulletin No. 74. Mineral Production of California in 1916, with County Maps, by Walter W. Bradley. 179 pp., 12 illustrations	Free
**Bulletin No. 75. United States and California Mining Laws, 1917. 115 pp., paper	----
Bulletin No. 76. Manganese and Chromium in California, by Walter W. Bradley, Emile Huguemn, C. A. Logan, W. B. Tucker and C. A. Waring, 1918. 248 pp., 51 illustrations, 5 maps, paper	.50
Bulletin No. 77. Catalogue of Publications of California State Mining Bureau, 1880—1917, by E. S. Boalich. 44 pp., paper	Free
Bulletin No. 78. Quicksilver Resources of California, with a Section on metallurgy and ore-dressing, by Walter W. Bradley, 1918. 389 pp., 77 photographs and 42 plates (colored and line cuts), cloth	1.50
Bulletin No. 79. Magnesite in California. (unpublished)	----
Bulletin No. 80. Tungsten, Molybdenum and Vanadium in California. (In preparation.)	----
Bulletin No. 81. Foothill Copper Belt of California. (In preparation.)	----
**Bulletin No. 82. Second Annual Report of the State Oil and Gas Supervisor, for the fiscal year 1916-1917, by R. P. McLaughlin, 1918. 412 pp., 31 illustrations, cloth	----
Bulletin No. 83. California Mineral Production for 1917, with County Maps, by Walter W. Bradley. 179 pp., paper	Free
**Bulletin No. 84. Third Annual Report of the State Oil and Gas Supervisor, for the fiscal year 1917-1918, by R. P. McLaughlin, 1918. 617 pp., 28 illustrations, cloth	----
Bulletin No. 85. Platinum and Allied Metals in California, by C. A. Logan, 1919. 10 photographs, 4 plates, 120 pp., paper	.50
Bulletin No. 86. California Mineral Production for 1918, with County Maps, by Walter W. Bradley, 1919. 212 pp., paper	Free
**Bulletin No. 87. Commercial Minerals of California, with notes on their uses, distribution, properties, ores, field tests, and preparation for market, by W. O. Castello. 1920. 124 pp., paper	----
Bulletin No. 88. California Mineral Production for 1919, with County Maps, by Walter W. Bradley, 1920. 204 pp., paper	Free
Bulletin No. 89. Petroleum Resources of California, with Special Reference to Unproved Areas, by Lawrence Vander Leck, 1921. 12 figures, 6 photographs, 6 maps in pocket, 186 pp., cloth	$1.25
Bulletin No. 90. California Mineral Production for 1920, with County Maps, by Walter W. Bradley, 1921. 218 pp., paper	Free
Bulletin No. 91. Minerals of California, by Arthur S. Eakle. (in press)	----

PRELIMINARY REPORTS.

Asterisks (**) indicate publication is out of print.

	Price
**Preliminary Report No. 1. Notes on Damage by Water in California Oil Fields, December, 1913. By R. P. McLaughlin. 4 pp.	----
**Preliminary Report No. 2. Notes on Damage by Water in California Oil Fields, March, 1914. By R. P. McLaughlin. 4 pp.	----
**Preliminary Report No. 3. Manganese and Chromium, 1917. By E. S. Boalich. 32 pp.	----
Preliminary Report No. 4. Tungsten, Molybdenum and Vanadium. By E. S. Boalich and W. O. Castello, 1918. 34 pp. Paper	Free
Preliminary Report No. 5. Antimony, Graphite, Nickel, Potash, Strontium and Tin. By E. S. Boalich and W. O. Castello, 1918. 44 pp. Paper	Free
Preliminary Report No. 6. A Review of Mining in California During 1919. Fletcher Hamilton, 1920. 43 pp. Paper	Free
**Preliminary Report No. 7. The Clay Industry in California. By E. S. Boalich, W. O. Castello, E. Huguenin, C. A. Logan, and W. B. Tucker, 1920. 102 pp. 24 illustrations. Paper	----
**Preliminary Report No. 8. A Review of Mining in California During 1921, with Notes on the Outlook for 1922. Fletcher Hamilton, 1922. 68 pp. Paper	----

MISCELLANEOUS PUBLICATIONS.

Asterisks (**) indicate publication is out of print.

**First Annual Catalogue of the State Museum of California, being the collection made by the State Mining Bureau during the year ending April 16, 1881. 350 pp.	
**Catalogue of books, maps, lithographs, photographs, etc., in the library of the State Mining Bureau at San Francisco, May 15, 1884. 19 pp	----
**Catalogue of the State Museum of California, Volume II, being the collection made by the State Mining Bureau from April 16, 1881, to May 5, 1884. 220 pp.	----
**Catalogue of the State Museum of California, Volume III, being the collection made by the State Mining Bureau from May 15, 1884, to March 31, 1887. 195 pp.	----
**Catalogue of the State Museum of California, Volume IV, being the collection made by the State Mining Bureau from March 30, 1887, to August 20, 1890. 261 pp.	----
**Catalogue of the Library of the California State Mining Bureau, September 1, 1892. 149 pp.	----
**Catalogue of West North American and many Foreign Shells with Their Geographical Ranges, by J. G. Cooper. Printed for the State Mining Bureau, April, 1894	----
**Report of the Board of Trustees for the four years ending September, 1900. 15 pp. Paper	----
Bulletin. Reconnaissance of the Colorado Desert Mining District. By Stephen Bowers, 1901. 19 pp. 2 illustrations. Paper	Free

MAPS.

Registers of Mines With Maps.

(**) indicates out of print.

	Price
Register of Mines, with Map, Amador County	$0.25
Register of Mines, with Map, Butte County	.25
**Register of Mines, with Map, Calaveras County	
**Register of Mines, with Map, El Dorado County	
**Register of Mines, with Map, Inyo County	
**Register of Mines, with Map, Kern County	
**Register of Mines, with Map, Lake County	
**Register of Mines, with Map, Mariposa County	
**Register of Mines, with Map, Nevada County	
**Register of Mines, with Map, Placer County	
**Register of Mines, with Map, Plumas County	
**Register of Mines, with Map, San Bernardino County	
**Register of Mines, with Map, San Diego County	
Register of Mines with Map, Santa Barbara County	.25
**Register of Mines, with Map, Shasta County	
**Register of Mines, with Map, Sierra County	
**Register of Mines, with Map, Siskiyou County	
**Register of Mines, with Map, Trinity County	
**Register of Mines, with Map, Tuolumne County	
Register of Mines, with Map, Yuba County	.25
Register of Oil Wells, with Map, Los Angeles City	

OTHER MAPS.

Asterisks (**) indicate the publication is out of print.

Map of California, Showing Mineral Deposits (50 x 60 in.)—	
**Mounted	
**Unmounted	
Map of Forest Reserves in California—	
Mounted	$0.50
**Unmounted	
**Mineral and Relief Map of California	
**Map of El Dorado County, Showing Boundaries, National Forests	
**Map of Madera County, Showing Boundaries, National Forests	
**Map of Placer County, Showing Boundaries, National Forests	
**Map of Shasta County, Showing Boundaries, National Forests	
**Map of Sierra County, Showing Boundaries, National Forests	
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**Map of Tuolumne County, Showing Boundaries, National Forests	
**Map of Mother Lode Region	
**Map of Desert Region of Southern California	
Map of Minaret District, Madera County	.20
Map of Copper Deposits in California	.05
**Map of Calaveras County	
Map of Plumas County	.25
**Map of Trinity County	
Map of Tuolumne County	.25
Geological Map of Inyo County. Scale 1 inch equals 4 miles	.60
Map of California accompanying Bulletin No. 89, showing generalized classification of land with regard to oil possibilities. Map only, without Bulletin	.25
Geological Map of California, 1916. Scale 1 inch equals 12 miles. As accurate and up-to-date as available data will permit as regards topography and geography. Shows railroads, highways, post offices and other towns. First geological map that has been available since 1892, and shows geology of entire state as no other map does. Geological details lithographed in 23 colors. Mounted	2.50

OIL FIELD MAPS.

These maps are revised from time to time as development work advances and ownerships change.

	Price
Map No. 1—Sargent, Santa Clara County	$0.50
Map No. 2—Santa Maria, including Cat Canyon and Los Alamos	.75
Map No. 3—Santa Maria, including Casmalia and Lompoc	.75
Map No. 4—Whittier-Fullerton, including Olinda, Brea Canyon, Puente Hills, East Coyote and Richfield	.75
Map No. 5—Whittier-Fullerton, including Whittier, West Coyote, and Montebello	.75
Map No. 6—Salt Lake, Los Angeles County	.75
Map No. 7—Sunset and San Emido and Kern County	.75
Map No. 8—South Midway and Buena Vista Hills, Kern County	.75
Map No. 9—North Midway and McKittrick, Kern County	.75
Map No. 10—Belridge and McKittrick, Kern County	.75
Map No. 11—Lost Hills and North Belridge, Kern County	.75
Map No. 12—Devils Den, Kern County	.75
Map No. 13—Kern River, Kern County	.75
Map No. 14—Coalinga, Fresno County	.75
Map No. 15—Elk Hills, Kern County	.75
Map No. 16—Ventura-Ojai, Ventura County	.75
Map No. 17—Santa Paula-Sespe Oil Fields, Ventura County	.75
Map No. 18—Piru-Simi-Newhall Oil Fields	.75
Map No. 19—Arroyo Grande, San Luis Obispo County	.75
Map No. 20—Long Beach Oil Field	.75
Map No. 21—Portion of District 4, Showing Boundaries of Oil Fields, Kern and Kings counties	.75
Map No. 22—Portion of District 3, Showing Oil Fields, Santa Barbara County	.75
Map No. 23—Portion of District 2, Showing Boundaries of Oil Fields, Ventura County	.75
Map No. 24—Portion of District 1, Showing Boundaries of Oil Fields, Los Angeles and Orange counties	.75
Map No. 25—Kern River Oil Field	.75
Map No. 26—Huntington Beach Oil Field	.75

DETERMINATION OF MINERAL SAMPLES.

Samples (limited to three at one time) of any mineral found in the State may be sent to the Bureau for identification, and the same will be classified free of charge. No samples will be determined if received from points outside the State. It must be understood that no assays, or quantitative determinations will be made. Samples should be in lump form if possible, and marked plainly with name of sender on outside of package, etc. No samples will be received unless delivery charges are prepaid. A letter should accompany sample, giving locality where mineral was found and the nature of the information desired.

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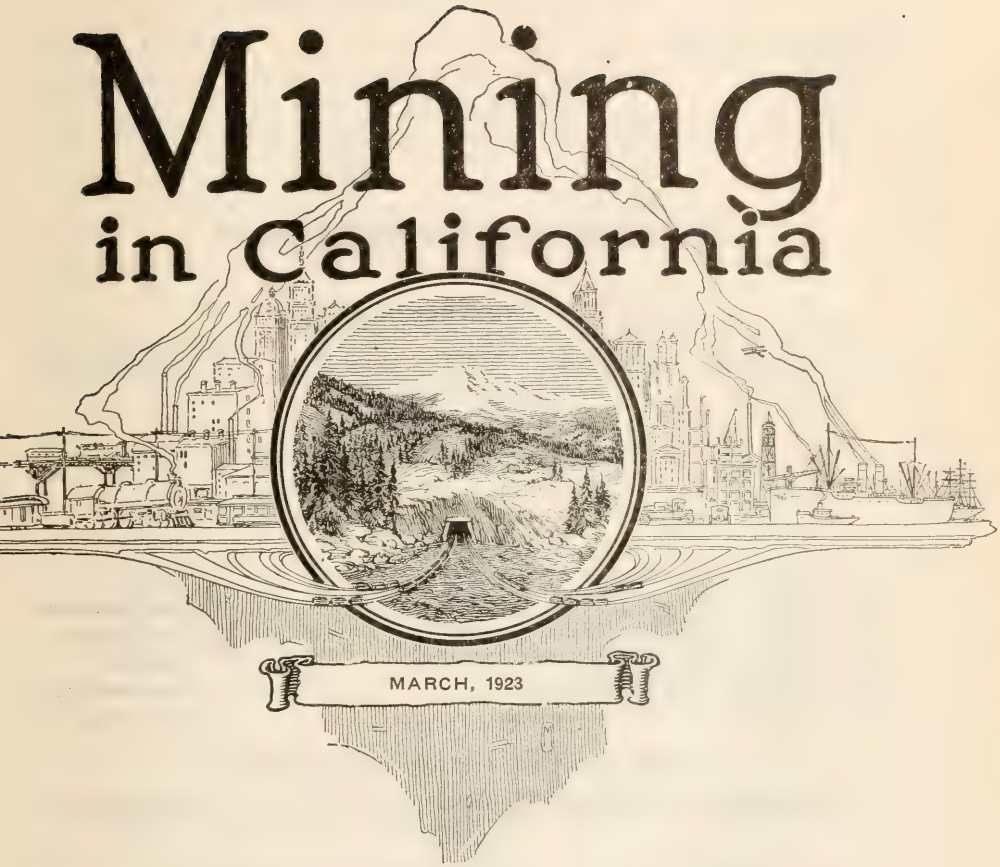
Mining in California



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CALIFORNIA STATE MINING BUREAU

EXECUTIVE AND TECHNICAL STAFF

LLOYD L. ROOT
State Mineralogist

WALTER W. BRADLEY
Deputy State Mineralogist

MINING DIVISION

C. A. LOGAN, District Mining Engineer	Auburn
C. McK. LAIZURE, District Mining Engineer	San Francisco
M. A. NEWMAN, District Mining Engineer	Los Angeles
W. BURLING TUCKER, District Mining Engineer	Redding
CHAS. S. HALEY, Mining Engineer	San Francisco
FRANK SANBORN, Mineral Technologist	San Francisco

DEPARTMENT OF PETROLEUM AND GAS

R. E. COLLOM, State Oil and Gas Supervisor	San Francisco

NOTE.—A detailed report of the activities of the Department of Petroleum and Gas is issued monthly by the State Mining Bureau, entitled 'Summary of Operations, California Oil Fields.'

CALIFORNIA STATE MINING BUREAU
FERRY BUILDING, SAN FRANCISCO

LLOYD L. ROOT State Mineralogist

Vol. 19 MARCH, 1923 No. 3

MONTHLY CHAPTER OF

REPORT XIX OF THE STATE MINERALOGIST

COVERING

MINING IN CALIFORNIA

AND THE

ACTIVITIES OF THE STATE MINING BUREAU

CALIFORNIA STATE PRINTING OFFICE
FRANK J. SMITH, Superintendent
SACRAMENTO, 1923

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SAN JOAQUIN
TUOLUMNE
MONO
SAN FRANCISCO
ALAMEDA
STANISLAUS
MARIPOSA
SANTA CLARA
MERCED
SAN BENITO
MONTEREY
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PREFACE.

The State Mining Bureau is maintained for the purpose of assisting in all possible ways in the development of California's mineral resources.

As one means of offering tangible service to the mining public, the State Mineralogist for many years has issued an annual or a biennial report reviewing in detail the mines and mineral deposits of the various counties.

The weak point in work of this character has been that the results of field investigations were so long in preparation that they had lost much of their usefulness by the time they finally appeared in print.

As a progressive forward step in advancing the interests of the mineral industry, publication of the Annual Report of the State Mineralogist in the form of monthly chapters was begun in January, 1922.

A monthly publication admits of several improvements over the old method of procedure. Each issue contains a report of the current development and mining activities of the state, prepared by the district mining engineers. Special articles dealing with various phases of mining and allied subjects by members of the staff are included. Mineral production reports formerly issued as an annual statistical bulletin are published herein as soon as returns from producers are compiled. The executive activities, and those of the laboratory, museum, library, employment service and other features with which the public has had too little acquaintance are reported monthly. The assistance formerly given to producers and consumers by consultation or correspondence only, is also proffered through this medium.

While current activities of all descriptions will be reported in these Chapters, the Bureau will not discontinue its practice of issuing from time to time technical reports on special subjects. A list of such reports now available is appended hereto, and the names of new bulletins will be added to that list in the future as they are completed.

The Chapters will be subject to revision, correction and improvement. Constructive suggestions from the mining public will be gladly received, and are invited.

The one aim of the Mining Bureau is to increase its usefulness and to stimulate the intelligent development of the wonderful latent resources of the State of California.

'Mining in California' is sent without charge to those on the Bureau's exchange list and to all others who make written or verbal request.

Pages are numbered consecutively throughout the year and an index to the complete reports will be included annually in the December number.

ANNOUNCEMENT.

In future, the publication of 'Mining in California' will be quarterly instead of monthly, and the next issue will be dated July, 1923. We find this action necessary principally owing to lack of available funds to meet the cost of printing.

DISTRICT REPORTS OF MINING ENGINEERS.

In 1919–1920 the Mining Department was organized into four main geographical divisions, with the field work delegated to a mining engineer in each division working out from a local branch office.

This move brought the Bureau into close personal contact with operators, but did not materially shorten the time between the gathering of data in the field and their publication in the Report of the State Mineralogist at the end of an annual or biennial period.

Mining activities and development noted by district engineers in their respective fields are now embodied in monthly reports published in each issue of 'Mining in California,' thus making these data available within a maximum period of thirty days, and the Monthly Chapter as far as possible a compendium of current mining progress throughout the State.

The counties included in each field division and the location of the local offices are shown on the accompanying outline map of the State. (Frontispiece.)

Although the petroleum industry is but little affiliated with other branches of mining, oil and gas are among the most valuable mineral products of California, and a report by the State Oil and Gas Supervisor on the current development and general conditions in the State's oil fields is included under this heading.

REDDING FIELD DIVISION.

W. Burling Tucker, Mining Engineer.

Shasta County.

COPPER MINES.

Arps Group of Mines is located in sections 20, 21, 28 and 29, T. 34 N., R. 3 W., one and one-fourth miles north of Copper City, in the Pittsburg Mining District. It comprises fifteen patented claims, totaling 250 acres, adjoining the Copper City claims of the Shasta Zinc and Copper Company. Owners are William Arps and R. M. Saeltzer of Redding. Elevation 900 to 1200 feet. The property is located on the Copper City lode; the shear zone in which this lode occurs traversing the Bully Hill rhyolite and having a general course of N. 30° W. The ore is pyrite, sphalerite and chalcopyrite with barite as a gangue. Developments consist of six tunnels, two shafts and several crosscuts and winzes, aggregating over 3000 feet. The most extensive workings are confined to the Globe, Hearst and Kaiser Wilhelm claims, as follows: No. 1 tunnel on the Globe claim is 120 feet long, coursing N. 45° E. Seventy feet from the portal a winze has been sunk 25 feet deep and crosscuts run east and west. A streak of ore was developed which is said to have assayed $40 gold, 5 per cent copper and 400 ounces in silver. No. 2 tunnel, which is located on the Globe claim, is a shallow tunnel 450 feet in length, course S. 55° W. for 100 feet, then east 360 feet. Some streaks of ore were developed that are reported to have carried high values in gold and silver.

Shaft No. 1, which is located near the southeast end of the Globe claim on Baxter gulch, was sunk to a depth of 50 feet, developing a lens of ore 8 feet wide, which is evidently the same ore body as was

developed in the Baxter shaft on the Baxter claim, owned by the Shasta Zinc and Copper Company. The ore extracted from this shaft is reported to have assayed 6 per cent copper, with $28 in gold and silver values.

Some 200 feet northwest of this shaft there is a massive outcrop of iron, which shows a heavy percentage of iron pyrite. The course of this outcrop is northwest and dip about 50 degrees to the southwest.

No. 3 tunnel is on the Hearst claim and trends a little east of north, about 200 feet. Four crosscuts from 30 to 50 feet in length were driven to the east of these workings.

The third crosscut shows 26 feet of low grade ore, which is reported to carry $6 in gold and 9 ounces in silver.

No. 4 tunnel, which is located on the Kaiser Wilhelm claim, is a crosscut tunnel driven N. 40° E., 500 feet. At 100 feet from the portal it cut a series of parallel fissures with strike N. 30° W. and dip 50 degree southwest showing ore carrying chalcopyrite, sphalerite, and pyrite. Several small lenses of ore were developed about 10 to 30 feet in length, and from 2 inches to 3 feet in width.

On the surface above No. 4 tunnel and about 150 feet south of No. 5 tunnel, in an open cut there is exposed 15 feet of sulphide ore, which occurs along the main shear zone.

No. 5 tunnel, which is located on the north end of the Kaiser Wilhelm claim, is driven N. 40° E., 400 feet. At a distance of 175 to 200 feet from portal it cut a lens of low-grade ore, containing galena, chalcopyrite, sphalerite and pyrite. On the surface about 100 feet above this tunnel, the shear zone is well-defined, having a general course of N. 30° W. dip 60 degrees southwest. Ore was mined at this point by open cuts and shallow tunnels, which is said to have carried high gold and silver values.

Several cars of ore have been shipped from the property to the Mammoth smelter at Kennett and are reported to have averaged $20 per ton in gold and silver values.

Equipment consists of blacksmith shop and tools, compressor-house, Chicago pneumatic compressor, air drills, cars and track. Idle.

Bibliography: State Mineralogist's Report XIV, p. 761, Bulletin No. 50, p. 110.

Colma Copper Group of Mines, located in sections 6 and 31, T. 33 and 34 N., R. 5 W., 6 miles west of Kennett, in the Backbone Mining District. It lies between the Uncle Sam and Mammoth holdings, at an elevation of 2400 feet. Owners are, M. E. Dittmar, of San Francisco, and Louis Monahan of Winthrop, California. The property is under bond to the American Zinc, Lead and Smelting Company, 1012 Pierce Bldg., St. Louis, Missouri. C. B. Nichols, superintendent.

This group of claims is being developed through No. 5 tunnel level of the Uncle Sam mine in hopes of picking up the direct extensions of the Mammoth mine ore trends, along the so-called 'California fissure' or shear zone. The trend of the tabular ore deposition has been developed in the Mammoth mine, from the point of original exposure for a distance of approximately 5000 feet through the Mammoth property towards the Colma Copper boundaries.

This is a very interesting piece of development work, and the logical point for further and deeper development of the Mammoth ore bodies.

Twelve men are employed in driving the main crosscut tunnel, which has been driven about 2600 feet.

Shasta May Blossom Mine, is located in section 14, T. 34 N., R. 3 W., one mile north of Winthrop, in the Pittsburg Mining district, and comprises twenty-six unpatented claims, known as the Keith group. Owners are Shasta May Blossom Mining and Smelting Company, C. M. Bradley, president; E. Seaburg, secretary. Offices, 604 Mills Building, San Francisco.

The property is located along the contact of Bully Hill rhyolite and black and gray shales, the latter being the footwall. The top of the mountain is capped with rhyolite, and on the east slope of the ridge are gossan croppings.

On the east slope of the ridge at an elevation of 1250 feet the main working tunnel has been driven N. 50° W., 720 feet, then due north 26 feet. The formation passed through in these workings is meta-andesite. At 320 feet from the portal, a drift has been run S. 70° W., 120 feet. In this drift a winze has been sunk to a depth of 18 feet. It is reported a small lens of ore was developed in the winze which is said to have carried high values in gold and silver. On the surface above this tunnel near the top of the ridge, there are gossan croppings about 160 feet in width. North of this tunnel at an elevation of 1350 feet, what is known as the Porter tunnel is driven due west 600 feet, and at 250 feet from the portal of the tunnel, a raise was run to the surface, a distance of 100 feet, and connected with a tunnel from the west slope of the ridge. It is reported that a shoot of ore was developed in this raise, about 40 feet in length and from four to six feet in width, which was said to carry 6 per cent copper and $8 in gold and silver. On the slope of the ridge south of this tunnel there is a body of gossan croppings, probably 60 feet wide. On what is known as the Kitchen claim, about the center of this group of claims, north of the above mentioned workings, there is a shallow tunnel 80 feet long, which developed a lens of sulphide ore, the general course of which is N. 20° E., dip 35 degrees east. The lens is 50 feet in length, and 8 feet wide. Ore is principally iron pyrite, with small amount of chalcopyrite. Last work on the property was done in January, 1921, when the company sunk a drill hole from the surface which connected with a drift from the lower tunnel, the depth of the hole being 170 feet. No ore was developed.

Equipment consists of Ingersoll-Rand, size 7 shot drill, and Domestic 9-h.p. gas engine, Rix compressor, driven by 50-h.p. General Electric motor, blacksmith shop, compressor building, bunk house, 1000 feet 3-inch air line, cars and track. It is reported that the company is planning to resume operations this summer.

Bibliography: State Mineralogist's Report XIV, p. 772, Bulletin No. 50, p. 100.

HORSE MOUNTAIN COPPER DEPOSITS.

Near the summit of Horse Mountain, west of the Bully Hill District, is an interesting occurrence of native copper, very small particles of which are scattered through a mass of altered igneous material chiefly of volcanic breccia or conglomerate of silicious lavas. Farther southwest, near the head of Potter Creek, a number of prospects show small lenses of copper ores, but as yet no considerable ore bodies have been

disclosed. The ore occurs along east and west fractures along epidote dikes which occur in the Dekkas andesite on the western slope of Horse Mountain. The ore is chalcopyrite associated with iron pyrite in quartz gangue, and carried values in gold and silver. The most extensive showing of ore in the district has been on the Shasta Belmont group of claims.

Minnie Haley Group of Mines, is located on the west slope of Horse Mountain in Section 24, T. 34 N., R. 4 W., 1½ miles northeast of Heroult. Elevation 1800 to 2000 feet. Owners are James Doyle, C. M. Allison of Copper City and George G. Dean of Redding. Holdings consist of eight unpatented claims.

Developments consist of four tunnels from 20 to 150 feet in length. At an elevation of 1800 feet a crosscut tunnel is being driven east 200 feet to cut an ore fissure bearing N. 50° E., which has been developed by a short tunnel 20 feet in length about 300 feet in elevation above this tunnel. In this short tunnel two feet of ore has been exposed, carrying bornite, chalcocite, chalcopyrite and some pyrite in a quartz gangue. On Minnie Haley No. 2 claim, there is a dike of epidote 8 to 15 feet wide, which strikes N. 80° E. and dips vertical. A tunnel has been driven east along this dike 160 feet. At 50 feet from the portal it cut a fracture which strikes N. 30° W., which was drifted on 30 feet to the northwest, developing 8 inches to 12 inches of ore. Near the face this tunnel cut another ore streak about 12 inches wide, which has a course of N. 50° E. Samples taken from these two ore showings are said to have assayed from 4 to 10 per cent copper, 5 to 10 ounces silver, and from $2 to $8 in gold.

To the north on the contact between the McCloud limestone and the shales of Nosoni formation, a tunnel has been driven 100 feet on a contact of limestone, and then 75 feet southeast in the shales but no ore has been developed on the contact. North of these workings in the limestone, some ore was developed on a N. 50° W. fissure. Shaft 20 feet deep. Two men employed on development work.

Shasta Belmont Group of Claims, formerly known as *Graham Group*, consists of nine unpatented claims, located in Sec. 24, T. 34 N., R. 4 W., 1½ miles northeast of Heroult. Elevation 1850 feet. Owner W. E. Casson of Carson City, Nevada.

Developments consist of two tunnels driven east along an east and west fracture. The lower tunnel was driven N. 60° E., and then 350 feet east and there is a raise on ore from this level 50 feet to an upper tunnel. The upper tunnel is driven N. 50° E., 75 feet, then drifted 150 feet east along an ore bearing fissure. The ore developed was from 6 inches to 2 feet wide, and was stoped for about 50 feet in length. Ore is chalcopyrite, chalcocite, and pyrite in a quartz gangue. Three cars of ore were shipped from the property in 1915 to the Mammoth Smelter at Kennett. Idle.

Kane and Wilburn Group. Two unpatented claims in Sec. 24, T. 34 N., R. 4 W., 1½ miles northeast of Heroult. Owners are Frank Kane and Archie Wilburn of Heroult. Elevation 1600 feet. A deposit of magnetite, with pyrrhotite, chalcopyrite and pyrite occurs in Dekkas andesite. The general course of the deposit is N. 50° E., and it is from 6 to 10 feet in width. Developments consist of a shaft 40

feet deep sunk on the outcrop and northwest of this shaft a crosscut tunnel driven north 50 feet, and a drift driven 200 feet southwest on ore. Idle, only assessment work being done on the property.

GOLD MINES.

Gold Bar Mines. This property comprises four unpatented claims, known as: Gold Bar No. 1, Gold Bar No. 2, Gold Bar No. 3, and Gold Bar No. 4, located in sections 22 and 26, T. 33 N., R. 5 W., 10 miles north of Redding, in the Churn Creek Mining district. Elevation 1600 feet. Owners are Frank O. Hollingsworth and Dr. G. A. Grotefend of Redding. The mine has not been worked since 1891, when ore was mined and hauled to the National Mill, where it is reported to have milled $50 per ton. The property has been idle since that time, and was relocated in January, 1923. A vein of quartz four feet wide occurs in the meta-andesite, general course N. 30° W. and dip 55 degrees to the southwest. The outcrop of the vein can be traced for 6000 feet.

Developments consist of three tunnels driven on the course of the vein. The two lower tunnels are caved, but from the indications ore was stoped from the lower tunnel to the upper tunnel. The vein has been drifted on in the upper tunnel for 100 feet, developing an ore shoot 80 feet in length, and 4 feet in width. Samples taken from this vein are reported to assay from $10 to $15 per ton in gold. A raise from the intermediate tunnel connects with this tunnel, distance 30 feet. The present locators have two men employed cleaning out old workings, and are planning to drive a tunnel on the vein at a lower elevation.

Siskiyou County.

On the *Souza Ranch*, owned by George Souza, near Yreka, it is reported that in prospecting on the property, a vein of quartz has been developed, which carries values in tungsten, and also some veins carrying values in copper, zinc and gold.

H. J. Barton of Yreka, who is interested in a large deposit of limestone near Gazelle, is reported to have discovered some marble of good quality on the property.

H. M. Balfrey and Thomas Park of Yreka are reported to have discovered a deposit of tin ore in the East Fork Mining District, along the Siskiyou-Trinity County line, near Kangaroo Lake. A number of locations have been made, known as the *Kangaroo Group of Claims.*

On the *Rainbow Group of Claims*, located near Hawkinsville it is reported Newton Gordon and T. C. Quinn of Hawkinsville recently developed a vein of rich gold-bearing ore. The owners are planning to do an extensive amount of development on the property this summer.

There is a considerable amount of activity in placer mining at Hawkinsville this spring.

Tehama County.

The property of the *Tuscan Oil Company*, located six miles north of Red Bluff was recently sold at sheriff's sale to Chas. H. Wood of San Francisco. When the company suspended operations the well was down 1700 feet.

Trinity County.

The Rebel Mine, located six miles up the South Fork of Trinity River from Forest Glen, in Sec. 31, T. 29 N., R. 12 W. Holdings consist of three claims, owner Jack Hoffman of Forest Glen. A vein of sulphide ore 4 feet wide has been opened up along a contact of black slate and quartzite. The ore is chalcopyrite associated with iron pyrite in quartz gangue. Samples taken from the vein assay 2 per cent copper with gold and silver values. A shaft is being sunk on the vein.

Precious Twins Placer Mine, located in Sec. 17, T. 4 N., R. 6 E., 12 miles north of Hyampom on the South Fork of the Trinity River, is being operated by Frank Lynch of Hyampom. Holdings consist of 200 acres. Two men are employed.

AUBURN FIELD DIVISION.

C. A. LOGAN, Mining Engineer.

Amador County.

The immense undeveloped clay resources of this county continue to be exploited in a small way and from time to time new pits are opened. The thousands of acres of potential clay land in the Ione-Carbondale district have never been systematically drilled, probably because the demand for clay has not been great enough yet to put any tax upon the areas known to be good clay land and already opened. The fact that so much of the land has been under one ownership may also have had some effect upon progress in this direction.

The following clay working establishments have in late years been buying part, and in many cases all, of their clay in this district. The list indicates the wide variety of uses to which the clays of the district are adapted.

Manufacturers using clay from the Ione-Carbondale district:

California Pottery Company, Oakland.
N. Clark and Sons, Alameda.
Craycroft and Knight, Fresno.
Gladding, McBean and Company, Lincoln.
Livermore Pressed Brick Company, Livermore.
Muddox Pottery Company, Sacramento.
Oakland Art Pottery Company, Oakland.
Pacific Porcelain Ware Company, Richmond and San Pablo.
Richmond Pressed Brick Company, Richmond.
West Coast Porcelain Company, Millbrae.
Ione Firebrick Company, Ione.
Furlong-Poxon Pottery Company, Vernon.
Los Angeles Pressed Brick Company, Los Angeles.
Stockton Fire and Enamel Brick Company, Stockton.
Garden City Pottery Company, San Jose.
Pacific Coast Pottery and Terra Cotta Company, San Jose.

No absolutely white-burning clay has been developed in the district yet. Some clays have been produced by washing and settling that are pure white before burning, but still contain a fraction of one per cent of iron oxides, enough to give a light straw color on burning, and these have been used for heavy hotel ware and porcelain. From this color the

clays range through various shades to a strong mottled red, which burns red and is used for tiling. Much of the white clay is nearly half quartz sand, giving low shrinkage and low absorption and a fusibility over 3000 degrees, and these qualities make it a good fire clay, eminently suited for fire brick. This sandy clay runs about 70 per cent silica, 20 per cent alumina, 1¼ per cent iron oxides, 0.3 per cent CaO, and 0.2 per cent MgO. Other samples where the proportion of sand is lower run up to 34 per cent alumina and correspondingly less silica, but in general are claimed to be typically low in lime. Occasionally pits have been started in low ground that had to be abandoned on account of gypsum seams in the clay, but these are erratic in occurrence.

The use of sand from these white clays for making glass was the result of war conditions which shut off supplies of foreign glass sand. With large contracts to fill, a large glass company took over a plant at Antioch and shipped in 1918 nearly 15,000 tons of clay-sand from Carbondale to the plant, where the sand was washed. The demand ceased when the cheaper Belgian glass sand could be had again.

The mining and hauling of the clay is cheap here even with the present small-scale operations, and freight rates to the principal markets around San Francisco bay are low. A broad-gauge railroad traverses the clay belt, making the haul from the pits to the loading stations short. Laborers in the pits receive $3.50 a day and specially trained men more. A soil and sand overburden generally has to be removed, varying in thickness from a few inches up to 20 feet, but where this is too thick the clay may be mined by wide, high drifts with pillars. Most of the work has been done by hand, but there is one steam shovel in use. Thirty per cent dynamite is used for blasting. Detailed cost figures cannot be shown as the business is closely competitive.

Changes since our report of 1920, entitled 'The Clay Industry in California' have been noted during a visit made this month.

Amador Kaolin Co. is no longer operating. This was a subsidiary of the *Illinois Pacific Glass Co.* and mined a large quantity of sandy clay during the war. The sand was washed in a plant at Antioch and used for glass. The market collapsed as soon as the Belgian sand imports could be resumed. The foreign sand is said to be mined in large quantity at very low cost, requires no treatment, and even in its crude condition is claimed to be superior to the local washed product.

W. D. Amick Property, formerly operated under lease by the Philadelphia Quartz Company, is idle since the company quit the production of domestic sand. They worked this property about three years, mining the clay-sand and washing it in the plant described in our bulletin, 'The Clay Industry in California,' and using the sand in the manufacture of sodium silicate. They have lately sold their mining equipment and are said to have returned to the use of Belgian sand.

Bacon and Bacon. Mark J. Bacon, manager, Ione. They do a general clay mining and shipping business. They employ 15 to 20 men and supply a variety of clay to a number of plants. The products made from these clays are diversified, including pressed and fire brick, architectural terra cotta, building tile, high-grade pottery, sewer pipe and porcelain ware. The clays range in color from the white clay-sand to a strong red mottled clay. This firm owns some clay land near Carbon-

dale, works other clay pits under lease and mines clay in some cases under contract for the owners and consumers. They have lately bought the mining equipment of the Philadelphia Quartz Co., including a steam shovel, and have moved it to Carbondale.

Mrs. W. W. Carlile Property near Ione contains a deposit of fine white clay and sand. It is undeveloped.

N. Clark and Sons own about 200 acres in the clay belt near Carbondale, from which they obtain high-grade clay for their pottery at Alameda. Clay is mined under contract for them by Bacon and Bacon.

Ione Firebrick Company continue operation of their plant near Ione for the manufacture of fire brick. A crew of nine or ten men are employed. The kilns are in operation most of the year, but the season for making bricks begins about March 15. They make about 20,000 bricks a day for eight months, and the kilns have a capacity of about 11,000 bricks a day, leaving 9000 a day to store for winter. The product is of good quality and finds a market anywhere in the Pacific Coast region where freight rates are favorable. Wm. Brown is manager.

Livermore Pressed Brick Company is planning to open a new clay pit on the J. M. Fancher property, about 4 miles from Ione, to supply their plant at Livermore. H. L. Bramwell is in charge.

McKissick Cattle Company owns a grant called Rancho Arroyo Seco, containing some 33,000 acres of land in the Ione-Carbondale clay and lignite belt, and mineral rights under several thousand acres more. Much of this land is known to be underlain by valuable clay deposits, but it has not been adequately drilled, so the full extent of the deposits is not known. The quality of the clay is also, therefore, an uncertain factor. Many of the firms using clay from this district get it from this property.

Newman Clay Company of Ione is employing 13 men at present (March 10) at its clay pits a mile from Ione at Newman Siding. This company digs white fire clay for sale to potteries and brick makers and has built up a good business from a small beginning. Where the overburden is heavy compared to the minable clay stratum, the latter has been worked by a system of wide drifts and pillars, but where the overburden is thin it is stripped by hand. The thickness of the workable layer of clay varies from 15 to 45 feet and it is underlain by a black stratum suggesting the proximity of lignite, though the latter has not been exposed here.

Philadelphia Quartz Company. Idle. See W. D. Amick property, *ante.*

COAL.

John Mocine is in charge of drilling operations on the Rancho Arroyo Seco, owned by the McKissick Cattle Company and taking in much of the country around Ione and Carbondale. The names and plans of those financing the drilling have not been divulged. An auger drill rig is being used and four men are employed. The drilling is being done for the avowed purpose of prospecting the lignite known to underlie the property and which has been mined in a small way by shafts and

drifts. It is the first comprehensive prospecting of this tract which contains about 33,000 acres, a considerable part of which will be drilled. The work already done has begun to shed new light upon the geology of the tract, according to Mocine. It has been thought in the past that the lignite occurred in relatively small deposits, in a chain of depressions once occupied by marshy lakes. Mocine thinks the present drilling is beginning to show that these basins are larger than supposed, or that the structure of country is monoclinal with the strata dipping gently toward the valley and with the coal much more widely distributed than previous operations indicated.

All of the holes so far drilled up to March 10 are said to have shown a good thickness of coal, the entire thickness of lignite stratum ranging from 21 to 30 feet, of which about 12 feet are classed as heart coal. The holes range from 15 to 40 feet deep on the upper edge, increasing to 81 feet deep 3000 feet westward. The property is thought to have interesting possibilities for a well financed company. A few years ago tests of the lignite in the district showed that it yielded up to 62 gallons of oil and 18 pounds of ammonium sulphate per ton, by destructive distillation and according to Mocine samples coming from the present drill holes are comparing favorably with these figures. Should the drilling show sufficient lignite, there are possibilities of a big new industry for the county. Incidentally, this prospecting is affording a great deal of new information about the extent and character of the clay beds in the rancho. Should the lignite ever be exploited in a large way by stripping, an immense amount of clay will be made available at very low cost.

The high yield of oil from this lignite raises very interesting questions as to the genesis of the oil. The lignite shows plainly its derivation from coniferous trees, the partly changed wood and fragments of unchanged bark being very common. When wet it has a clayey appearance but dries to a brittle and easily broken mass that will not stand transportation well. Good briquettes can be made from it, some having been made in a plant put up years ago. These are said to have been made without adding any binder.

SAN FRANCISCO FIELD DIVISION.

C. McK. Laizure, Mining Engineer.

Inquiries handled in the San Francisco office during the past thirty days indicate that mining conditions in this district continue to improve.

This is particularly true of quicksilver operations, gold quartz mining in Mariposa County, and among the magnesite and other structural and industrial mineral producers; however, as no field work was undertaken, detail reports must be deferred until an opportunity is found to confirm reported activities by personal visit.

LOS ANGELES FIELD DIVISION.

M. A. Newman, Mining Engineer.

Kern County.

The Standard Consolidated Gold Mining Company, which owns the old *Exposed Treasure Mine*, situated 5 miles south of Mojave, is running a crosscut tunnel to cut the Exposed Treasure and other veins

at depth, and also unwater the old mine workings. This work has been under the direction of Consulting Engineer, D. B. Myers. In view of the large production of the Exposed Treasure Mine in the past, this piece of exploration work is well warranted. If commercial ore is encountered, the Mojave District will become the center of much activity.

The discovery of the Yellow Dog Mine a little over a year ago, which lies but a short distance from the Exposed Treasure Mine, has attracted considerable attention to the camp.

Los Angeles County.

Amargosa Talc Company. This company has just completed and put into operation a talc grinding plant in Los Angeles. The raw material comes from its talc mines in Death Valley. The talc is primarily to be ground and used in the manufacture of talcum powder and as a filler for paper. It is estimated it will have a capacity of 500 to 600 tons per month.

A. Getty, president; John F. Sherran, secretary; R. W. Glendenning, general manager. Office: 224 Santa Fe avenue, Los Angeles, Cal.

Catalina Isand Quarry. The tremendous expansion in building and road construction in Los Angeles and vicinity is creating an increasing demand for crushed rock of good quality. To fill this need *Graham Brothers* are now opening a rock quarry near Pebbly Beach at the Isthmus on Catalina Island. The quarry is being equipped with the best machinery obtainable in the way of compressors, rock drills, conveyors and other necessary accessories to obtain minimum costs in operation. The rock will be barged direct to San Pedro and from there sent by rail to Los Angeles and adjacent points.

It might well pay land owners within reasonable distance of Los Angeles to look into the character of the rock on their holdings, for good quality of rock, sand, gravel, limestone, clay or gypsum is in much demand at present.

Magnesium Materials Company. This company has been formed for the manufacture of magnesium oxychloride, and has received a permit from the Corporation Commission to sell its preferred and common stock, in amount $25,000.

It will maintain a factory and office at 809 North Main street, Los Angeles.

San Bernardino County.

California Rand Silver, Incorporated. At the beginning of March, this company issued its regular dividend No. 38, calling for a distribution of $25,600, which makes a total in dividends since January 1, this year, of sixteen cents, or $204,800.

Extraction and Advancement.

During the month of February, extraction from the mine was as follows:

Milling ore	6,772 tons
Shipping ore	800 tons
Waste	3,928 tons
Total extraction	11,526 tons

The total advancement in all workings in the mine during the month was 1157 feet.

Ore to the mill	9,163 tons
Concentrates to the smelter	387 tons
Ore to the smelter	756 tons

Of the ore milled, 2,391 tons came from the mill dump.

The Mill.

During the month of February, the daily average tonnage of the mill (28 days) was 327 tons. The daily average, running time, was 353.75 tons. The lost time during the month was 26 hours and 42 minutes, being largely due to power off, water shortage and the time necessary for repairs.

Total average value of heads for ore milled	$16 32
Total average value of tails	1 84
Recovery per ton	14 48
Total recovery on 9,363 tons	132,698 56
Average concentrate value per ton	354 34
Tons concentrates produced	374.5
Tons concentrates shipped	378

At the meeting of the board of directors held March 3, it was determined to increase the company's surplus to one-half million dollars, the reasons for the increase being set forth in the following resolutions:

WHEREAS, When the provisions of the Pittman Act shall have been complied with, which will probably be in the late fall or early winter of this year, the price of silver, according to the best authorities, will greatly decrease; and

WHEREAS, It may be advisable in the ensuing year for the company to be in a position to hold its silver bullion from time to time in order to take advantage of the best prices, the fluctuations of the market considered; and

WHEREAS, Where the income tax for this corporation, payable in 1924 and based upon production in 1923, will be as heavy as in former years, the earnings of the corporation for the said year 1924 bid fair to be greatly reduced because of the lessened price of silver; and

WHEREAS, A considerable additional sum may be due the government under adjustment of our income taxes for 1919, 1920 and 1921; and

WHEREAS, An experimental one-ton reduction plant is now in operation which it is hoped and believed will demonstrate that it will be possible to reduce our concentrates to bullion, thereby saving heavy smelting and shipping charges, in which event a twenty-ton reduction plant will be required, the cost approximating $75,000; therefore, be it

Resolved, That to meet these conditions, possible and certain, a largely increased surplus at the close of this year will prove most advantageous to the future successful conduct of the business of the corporation, it is therefore ordered and directed that, beginning with this date, the monthly earnings of the company, over and above the sum required to meet the regular monthly dividends, shall be applied to the surplus until such fund shall have reached the sum of $500,000.

Financial.

Returns from the smelter for the month total $178,462.73.

After paying this dividend, meeting the month's expenses, and paying $30,000 on income tax, the company has a cash balance of $294,450.36, an increase in surplus over last month of, roundly, $40,000.

The Copper Basin Consolidated Mines Company, with large holdings in Copper Basin, at Monumental Peak, is preparing for continuous operations.

The property is located eleven miles north of Drennan, a station on the Parker cut off of the Atchison, Topeka and Santa Fe Railway on the Colorado River.

Installation of a new hoist on its 300-foot incline shaft has just been completed.

The company claims to have a vein of copper sulphide ore 8 feet wide, which will average 6 per cent copper. It is the intention to mine and ship this ore to the Humboldt smelter. Besides ore of a shipping grade, there is a considerable tonnage of low grade copper ore for which a plant will be built in the future.

J. L. Curtis, of Los Angeles, is president and Jas. C. McDowell, superintendent of the company. Main office: Lankershim Building, Los Angeles.

San Diego County.

The Duralite Company, Incorporated, has recently acquired control of the International Magnesium Products Company, whose plant is located at Chula Vista. This plant, which has now been idle for over a year, has been equipped with new machinery and will have a production of 400 to 500 tons per day of magnesite building products. The magnesite used is obtained from deposits in Lower California. The company has a field in which it can expand its operations to large proportions, as there appears to be no slowing down of the building program in southern California.

President, Dr. C. S. de Mey; Secretary and General Manager, Mr. Swartz.

General office: Marsh-Strong Building, Los Angeles.

The General Petroleum Company is reported to have purchased 640 acres of otalite deposits from R. E. Harrison of San Diego. It will use the otalite in the refining of its oils. The company has spent considerable time in experimental work in making this material suitable for its refineries. Otalite, as it is called locally, is in reality a variety of montmorillonite, a mineral of the clay group, carrying a large percentage of combined water, and is a hydrous silicate of alumina. It is quite soft, has a soapy feel and occurs white, grey, or pink.

OIL FIELD DEVELOPMENT OPERATIONS.

H. E. Collom, State Oil and Gas Supervisor.

From February 10, 1923, to and including March 10, 1923, the following new wells were reported as ready to drill:

Company	Sec.	Twp.	Range	Well No.	Field
KERN COUNTY—					
Pacific Oil Co.	35	30	24	85	Elk Hills
Pacific Oil Co.	35	30	24	38	Elk Hills
Pan American Petroleum Co.	34	30	24	2	Elk Hills
Pan American Petroleum Co.	34	30	24	3	Elk Hills
Pacific Oil Co.	7	32	24	69	Midway
Pacific Oil Co.	5	32	24	71	Midway
Murvale Oil Co.	26	31	23	21-M	Midway
Section Two Oil Co.	2	31	22	2	Midway
Union Oil Co.	4	11	23	3	Sunset
Comanche Point Oil Co.	32	12	18	2	----------
LOS ANGELES COUNTY—					
Acme Petroleum Corp.	19	4	12	Damron 2	Long Beach
Big Three Oil Co.	30	4	12	1	Long Beach
Cannon Day Oil Syn.	19	4	12	1	Long Beach
D'Angelo Oil Co.	19	4	12	2	Long Beach
Davis & MacMillan	30	4	12	4	Long Beach
Walter H. Fisher	30	4	12	5	Long Beach
Fred B. Foster & Co.	30	4	12	46	Long Beach
Fred B. Foster & Co.	19	4	12	48	Long Beach
General Petroleum Corp.	19	4	12	Clock 3	Long Beach
George F. Getty	19	4	12	Galbreath 7	Long Beach
George F. Getty	19	4	12	Ingles 6	Long Beach
Harmony Rose Oil Syn.	19	4	12	1	Long Beach
Hub Oil Co.	24	4	13	Beck 1	Long Beach
Lambert Hampton Oil Syn. No. 1	30	4	12	1	Long Beach
L. A. Lambert Oil Syn. No. 2	30	4	12	1	Long Beach
L. A. Lambert Oil Syn. No. 3	30	4	12	1	Long Beach
Mike Mikels	29	4	12	2	Long Beach
E. J. Miley	19	4	12	Mills 4	Long Beach
H. H. Patton	19	4	12	3	Long Beach
Petroleum Midway Co. Ltd.	19	4	12	Bauman 1-B	Long Beach
Petroleum Midway Co. Ltd.	30	4	12	Ella Clark 1	Long Beach
Progressive-Burnett Syn.	30	4	12	1-A	Long Beach
Prudential Petroleum Co.	29	4	12	2	Long Beach
Queen City Oil Co.	19	4	12	1	Long Beach
Shallow Field Oil Co.	19	4	12	1	Long Beach
Shell Co.	29	4	12	Nesa 4	Long Beach
Shell Co.	29	4	12	Rose 1	Long Beach
Shell Co.	29	4	12	Kent-Garth 1	Long Beach
Shell Co.	29	4	12	Alamitos 7	Long Beach
Signal Union Syn.	30	4	12	Burnett Villa 1	Long Beach
Jos. K. Tobin	30	4	12	3	Long Beach
Tucker & Johnston	30	4	12	2	Long Beach
Clarence M. Turner Syn.	24	4	12	1	Long Beach
Weinberg Nuetzel Syn.	20	4	12	1	Long Beach
Western Star Oil Co.	19	4	12	Foster 1	Long Beach
Western Star Oil Co.	19	4	12	Walker 1	Long Beach
Yale Signal Hill Syn.	30	4	12	1	Long Beach
Union Oil Co.	1	2	12	La Merced 24	Montebello
Anchor Oil Co.	6	3	11	3	Santa Fe Springs
Are-Bee Syn.	7	3	11	31	Santa Fe Springs
Are-Bee Syn. No. 3	7	3	11	32	Santa Fe Springs
Barnsdall Foster Co.	1	3	12	1	Santa Fe Springs
Coalinga Mohawk Oil Co.	6	3	11	Batson 3	Santa Fe Springs
Coalinga Mohawk Oil Co.	6	3	11	Lamb 1	Santa Fe Springs
Daly Oil Syn.	4	3	11	1	Santa Fe Springs
General Petroleum Corp.	6	3	11	Santa Fe 77-B	Santa Fe Springs
General Petroleum Corp.	5	3	11	Santa Fe 45	Santa Fe Springs
General Petroleum Corp.	6	3	11	Hill 87-A	Santa Fe Springs
George F. Getty	5	3	11	Baker 12	Santa Fe Springs
George F. Getty	5	3	11	Baker 11	Santa Fe Springs
Hopkins & Howland	6	3	11	Baker 1-A	Santa Fe Springs
Oscar R. Howard	6	3	11	Hathaway 2	Santa Fe Springs
C. C. Julian	6	3	11	6	Santa Fe Springs
Luneta Oil Co.	9	3	11	1-A	Santa Fe Springs
Petroleum Midway Co. Ltd.	6	3	11	Standlee 2	Santa Fe Springs
Petroleum Midway Co. Ltd.	6	3	11	Weaver 3	Santa Fe Springs
Standard Oil Co.	31	2	11	Santa Gertrudes 3	Santa Fe Springs
Standard Oil Co.	31	2	11	Santa Gertrudes 4	Santa Fe Springs

OIL FIELD DEVELOPMENT OPERATIONS—Continued.

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES COUNTY—Cont'd.:					
Standard Oil Co.	1	2	12	Weisel 1	Santa Fe Springs
Standard Oil Co.	31	2	11	Jordan 1	Santa Fe Springs
Standard Oil Co.	31	2	11	Hepler 3	Santa Fe Springs
Union Oil Co.	5	3	11	Meyer 9	Santa Fe Springs
Union Oil Co.	31	2	11	Howard 6	Santa Fe Springs
Union Oil Co.	5	3	11	Meyer 13	Santa Fe Springs
Union Oil Co.	5	3	11	Farwell 7	Santa Fe Springs
Union Oil Co.	5	3	11	Meyer 10	Santa Fe Springs
C. C. M. O. Co.	9	4	14	Del Amo 5	Torrance
C. C. M. O. Co.	8	4	14	Del Amo 6	Torrance
C. C. M. O. Co.	10	4	14	Torrance 6	Torrance
C. C. M. O. Co.	16	4	14	Torrance 7	Torrance
A. F. Gilmore Co.	10	4	14	Leake 1	Torrance
Graham et al.	16	4	14	Graham 1	Torrance
Hub Oil Co.	15	4	14	Guss-Frye 1	Torrance
Petroleum Midway Co. Ltd.	9	4	14	Casad 1	Torrance
Shell Co.	9	4	14	Frenger 1	Torrance
Mohawk Oil and Gas Syn.	7	2	14	1	----------
Santa Monica Royalties Oil Well Co.	28	1	19	1	----------
R. C. Shiflet	34	3	12	1	----------
ORANGE COUNTY—					
Chicksan Oil Co.	35	5	11	1	Huntington Bch.
George F. Getty	35	5	11	Andrews 2	Huntington Bch.
Holly Oil Co.	35	5	11	6	Huntington Bch.
Holly Oil Co.	35	5	11	5	Huntington Bch.
Miley-Keck Oil Co.	2	6	11	37	Huntington Bch.
Standard Oil Co.	2	6	11	Hunt. B. 20	Huntington Bch.
Texas Holding Co.	2	6	11	3	Huntington Bch.
Western Seaboard Oil Co.	35	5	11	Russell 1	Huntington Bch.
RIVERSIDE COUNTY—					
Spindle Top Oil Assn.	25	7	10	1	----------
SAN DIEGO COUNTY—					
R. M. Cole Oil & Gas Syn.	11	15	1	1	----------
SANTA BARBARA COUNTY—					
Wm. F. Tobin	Lo	okout	Park	4	Summerland
Wm. F. Tobin	Lo	okout	Park	5	Summerland
Wm. F. Tobin	Lo	okout	Park	6	Summerland
Wm. F. Tobin	Lo	okout	Park	7	Summerland
SONOMA COUNTY—					
Edgar T. Wallace	Ducker Ranch	5	6	1	----------
TULARE COUNTY—					
The Porterville Oil & Gas Co.	10	22	26	1	----------
Daisy Wilson	32	17	23	1	----------
VENTURA COUNTY—					
Dr. J. Von Gal-Scale	4	1	20	8	Conejo
Dr. J. Von Gal-Scale	4	1	20	9	Conejo
Dr. J. Von Gal-Scale	4	1	20	10	Conejo
Dr. J. Von Gal-Scale	4	1	20	11	Conejo
Dr. J. Von Gal-Scale	4	1	20	12	Conejo
Reaves Alymore, Jr.	20	4	19	1	Sespe

SPECIAL ARTICLES.

Detailed technical reports on special subjects, the result of research work or extended field investigations, will continue to be issued as separate bulletins by the Bureau, as has been the custom in the past.

Shorter and less elaborate technical papers and articles by members of the staff containing much information that will add to the permanent value of the Monthly Chapter are included in each number of 'Mining in California.'

It is anticipated that these special articles will cover a wide range of subjects both of historical and current interest; descriptions of new processes, or metallurgical and industrial plants, new mineral occurrences, and interesting geological formations, as well as articles intended to supply practical and timely information on the problems of the prospector and miner, such as the text of new laws and official regulations and notices affecting the mineral industry.

NOTES ON PEAT AND ITS OCCURRENCE IN CALIFORNIA

By C. McK. Laizure.

In 1921, the last year for which figures are available, California led all other states in the Union in the production of peat. Up to the present time the peat produced here has not been utilized as a fuel, and the State Mining Bureau has never made a field investigation or survey of the state's peat resources, nor collected production statistics as it has in the case of petroleum, coal, and natural gas. The occurrence of peat in Orange and Humboldt counties was briefly noted, however, in the Tenth and Eleventh Reports of the State Mineralogist, 1890-1892.

Inquiries from various sources have come to the State Mining Bureau during the past few years regarding the possibilities of the peat industry, and for the purpose of supplying some facts regarding this little known product and the localities in which it is found, the following notes have been compiled.

No claim to originality is made, most of the data herein having previously appeared in various publications, particularly the Journal of the American Peat Society; Transactions of the Commonwealth Club of San Francisco, 1912, and the United States Geological Survey Bulletin No. 728, 1922.

Peat is defined as the organic residuum resulting from the arrested decomposition of leaves, twigs, roots, trunks of trees, shrubs, mosses, and other vegetation in areas continually covered or saturated with water.

It may be identified as the dark-colored soil found in bogs and swamps, commonly called muck, but if the material will ignite and burn freely when dry, it preferably should be termed peat.

Native peat contains about ten per cent of solid matter and ninety per cent of water. Its specific gravity ranges from 0.1 to 1.06 and it weighs from 7 to 65 pounds per cubic foot. The reduction of its high content of moisture is the paramount necessity for commercial utilization. Attempts have been made to remove the excess moisture by com-

pression, but it resists the heaviest pressure and its water content can be economically reduced only by evaporation.

The texture of peat depends upon the kinds of plants from which it was formed and the physical conditions under which it accumulated. It has been classified by its physical characteristics as turfy peat, fibrous peat, earthy peat, and pitchy peat.

Peat ranges in color from light yellow through various shades of brown to jet black, the color representing in a measure the degree of decomposition.

Chemically peat consists of carbon, hydrogen and oxygen and relatively small quantities of nitrogen. Its composition is illustrated by the following analysis (ash and moisture omitted):

Carbon	59.50
Hydrogen	5.50
Oxygen	33.00
Nitrogen	2.00
	100.00

The quantity of 'fixed' or 'free' carbon generally ranges from 10 to 60 per cent, the remainder being combined with other elements. Volatile matter usually ranges from 25 to 70 per cent, and moisture from 15 to 30 per cent in air-dried peat. As the volume of oxygen is relatively high, good peat ignites readily and burns freely, leaving little unconsumed residue. Sulphur usually ranges from 0.2 to 0.6 per cent, and nitrogen from 1 to 4 per cent. The ash in native peat, which renders it more or less impure, constitutes from 3 to 30 per cent of its dry weight. The ash content of the best peats in the United States ranges from 6 to 12 per cent, though many of the largest deposits in the Great Lakes area contain 15 per cent of ash.

The value of peat in soil fertilization lies in its content of nitrogen and humus and in the beneficial mechanical effect it produces on certain lands. Black, well-decomposed peats are the most satisfactory ordinary fertilizers, for they are generally heavier and more compact and contain more nitrogen and less fibrous material than the brown peats.

More than 50,000,000 tons of peat fuel are consumed annually by European countries, but only small quantities of peat fuel have been produced in the United States. Operators say that air-dried machine peat can be produced in the United States for from $1.50 to $5.00 per ton and that it could perhaps in some localities successfully compete with other fuels for domestic and industrial purposes.

Many extravagent claims concerning the fuel value of peat have been made, but authorities have concluded that peat can be converted into fuel on a large scale in the United States only in the form of machine blocks, powder, and gas.

Machine peat which is allowed to dry slowly contracts into a dense mass covered by a gelatinous skin-like substance called hydrocellulose. After the moisture has been reduced to about 25 per cent this coating renders the machine peat impervious to water, even when immersed. It is clean to handle and burns freely, yielding an intense heat and producing no soot or other objectionable deposit. For open grates this fuel is nearly ideal, and it is said that it may be burned in the same stoves as wood or coal.

For certain commercial uses powdered peat has many advantages over machine peat. In this form it may be blown with compressed air into the furnace where by means of forced draft, ignition is almost instantaneous and instead of burning on the grate the peat forms a gas which gives a uniform fire throughout the combustion chamber. Good peat thus treated when burned in furnaces designed to give the most complete and efficient combustion, will generate nearly as much energy in the form of live steam as the same weight of powdered coal. According to reports in this country, powdered peat has great possibilities, not only for boiler firing but for metallurgical work and for use in cement and other kinds of kilns in which powdered coal has been successfully burned.

Peat can also be made into briquets with a suitable binder, and although there are some advantages in the matter of cleanliness and less bulk, these advantages are largely offset by the high cost of production.

Peat coke is manufactured in Europe, and it is said to be equal in quality to the best grades of wood charcoal.

Alcohol, acetic acid, ammonia, ammonium sulphate, paraffin wax, illuminating and lubricating oil, phenol and asphalt are some of the valuable by-products obtained in coking peat by the dry distillation process.

Probably the most economical way to utilize peat as fuel is in the gas producer. Tests with Florida peat, carried on by the United States Geological Survey relative to using the producer gas for generating power, or peat under boilers for generating electricity by steam, showed that 5.78 pounds of dry peat per electrical horsepower hour were required by the steam plant, compared to 2.39 pounds with the gas producer.

Tesla coal, when used in the producer plant, required 2.38 pounds of dry coal, showing that Florida peat and Tesla coal are equivalent in this respect. It may be remarked here that the climatic conditions under which peat is formed in California are somewhat similar to those in Florida.

In comparing the gas obtained from peat with that from coal as to the heat units per cubic foot, the following results were obtained:

	B.T.U. per cubic foot
Massachusetts peat	166
Florida peat	175
Kentucky coal (average)	164
Illinois coal	143
Tesla (Cal.) coal	158

These figures show that peat gas has a higher heating value per cubic foot than that from the better gas-making coals. It should make an excellent fuel for ceramic kilns, lime and cement kilns, metallurgical furnaces, forges, ore-roasting and similar furnaces.

A complete description of peat-fuel machinery and manufacturing processes will be found in United States Bureau of Mines Bulletin No. 16, 'Uses of Peat,' 1911.

There are many uses for peat other than for fuel purposes. Peat moss, marsh grass and fibrous peat are employed in the manufacture of surgical dressings, of rugs and carpets, of packing material, of artificial wood, of paper, and of substitutes for cotton and woolen cloth.

From October, 1917, to November 11, 1918, the Northwestern and Atlantic divisions of the American Red Cross prepared 595,540 peat-moss pads for surgical use. Most of the moss was gathered from bogs in Washington, Oregon, and Maine, and the pads were used in military hospitals at home and abroad.

Peat has lightness, resiliency and antiseptic properties and makes excellent packing material for eggs, fruit, vegetables, and fragile articles. Peat moss is utilized in shipping flowers, shrubs and plants. Dry peat is a non-conductor of heat and is valuable in ice houses and as a packing for water pipes.

In the United States peat at present is utilized chiefly as an ingredient of fertilizers and stock food and as a crop soil.

The United States contains about 12,000 square miles of undrained land estimated to be capable of yielding nearly fourteen billion short tons of air-dried peat. The average deposit will yield two hundred tons per acre-foot. The peat areas are distributed throughout the Great Lakes, New England, and Atlantic and Pacific Coast states. Minnesota, Wisconsin, Florida, and Michigan contain the most extensive deposits. The peat deposits of Canada cover 37,000 square miles.

The area of peat deposits on the Pacific Coast is small compared to that in the Northern and Atlantic coastal region, and this fact adds interest to the statement made at the beginning of this article, that in 1921 California was the largest producer of peat in the United States.

In that year the peat industry throughout the country suffered by reason of the decrease in the selling price of agricultural products, which, combined with high freight rates prevented farmers from purchasing fertilizer. The following table shows the production in the United States from 1916 to 1921:

Year	Number of plants reporting	Short tons	Value	Average price
1916	13	52,506	$369,104	$7 03
1917	18	97,363	709,900	7 29
1918	25	107,261	1,047,243	9 76
1919	15	69,197	705,532	10 20
1920	18	73,204	921,732	12 59
1921	21	30,406	260,119	8 55

The twenty-one plants reporting production in 1921 were distributed as follows: New Jersey 4, New York 4, California 3, Illinois 2, and Florida, Georgia, Massachusetts, Michigan, Minnesota, New Hampshire, North Carolina, and Wisconsin 1 each. California was the largest producer, with an output of 12,672 short tons, valued at $117,580. New Jersey ranked second, with an output of 12,051 tons, valued at $94,269. Illinois ranked third.

The three California producers noted above all operated in southern California, but it is understood that another operator has since begun producing from the Sacramento-San Joaquin delta area. In October 1922 it was said that three cars per week were being shipped by this operator.

The thickest deposits in this state are believed to underlie the area following a line traced around the edges of the marshes and extending from Carquinez Straits to Stockton to Rio Vista, closing at the point of commencement again and covering an area in all of approximately twelve townships, 432 square miles, or 276,460 acres with peat to a thickness of from 6 to 80 feet, or an average or 43 feet. A large portion of this expanse, particularly in the eastern part, has been covered by debris from our early hydraulic mines, while in other portions the peat is more or less sandy. This acreage noted is therefore divided by two, giving as a result 138,248 acres. Of this area 60,000 acres are known to contain good peat to a depth of at least six feet or more. In one acre of land two hundred tons of machine-dried peat are recoverable for each foot of raw material. The 60,000 acres will therefore contain 60,000 x 6 x 200 or 72,000,000 tons which will be placed as proved. The 138,248 acres with 43 feet of peat would contain 138,248 x 43 x 200, or 1,188,932,800 tons. The amount of peat in this area under consideration is given as follows:*

Proved	72,000,000 tons
Possible	1,188,932,800 tons

No attempt has been made at any accurate estimate in the preceding figures, as such would be impossible from any existing data. It is highly probable that a large portion of the 'possible' area will be found unavailable because of mixture with silt. It is also unfortunate for the peat industry that this land is among the most valuable in California for agricultural purposes and it is questionable if peat products will prove more remunerative than those of agriculture.

Shallower peat beds are also known to exist in parts of Sutter and Yolo basins, throughout the marshes of San Francisco Bay, in the marshes near the mouth of the Salinas River and in that portion of Klamath Lake located in California. Peat also occurs in Humboldt, Siskiyou, Los Angeles, Orange, and San Bernardino counties, but these localities do not begin to compare in possibilities with those of the lower Sacramento and San Joaquin River area.

The peat industry already developed in California, despite an almost total lack of definite data regarding occurrences of this interesting raw material, would indicate that it is a product whose possibilities are far from being fully realized and one well worthy of further study.

*Requa, M. L., Bradley, F. W., and Stalder W., Fuel Resources of California; Commonwealth Club of San Francisco, Trans. 1912.

SECRETARY'S OFFICE.

WALTER W. BRADLEY, Deputy State Mineralogist.

The California State Mining Bureau was created April 16, 1880, by legislative act. In March, 1893, the original act was repealed and an amended act approved and passed by the legislative body. Again on June 16, 1913, a new Mining Bureau Act was approved which became effective August 10, 1913, repealing all former acts, and forming the basic law under which the Bureau now functions.

It is doubtless true that both the mining and lay public have not in the past always recognized the part played by the Bureau in the development of the state's mineral resources. Innumerable inquiries regarding them, originating within and without its borders and in foreign countries, have been answered with ultimate results reflected by a consistent growth in the value of the state's mineral output since the records of production were first compiled by the Bureau in 1887.

This organization has been occupied for 43 years in actively and in all possible ways assisting in the development of California's mineral resources. Its work, whenever possible, is made a matter of permanent record by means of published bulletins and reports. These publications form a cumulative, live and up-to-date history of mining progress in the state. Prospective investors from other states and other lands come to the State Mining Bureau for information as to the location of mineral deposits, the extent and value of their mineral content, and names of owners with whom they may enter into business transactions. Owners and operators—producers of raw materials—come to the Bureau to find out where they may be able to market their output, and to learn whether or not the mineral they have discovered is commercially valuable, and if it meets the requirements of the consumer.

It is believed that a fuller understanding of the economic position occupied by the Bureau can be imparted to the public, whose funds support it, by embodying in these chapters a review of the executive activities. The responsibility for the coordination of effort of each department, to the end that the utmost efficiency may be maintained with the limited and variable appropriations accorded the Bureau by successive legislatures, rests upon the administrative office.

Activities referable to that office, such as reports of new maps and publications issued, amount of mail handled, changes and enlargements in offices, changes in personnel of the staff, property and equipment, financial statements, etc., are therefore included herein.

New Publications.

During the month the following Bureau publications have been made available for distribution:

Summary of Operations, California Oil Fields, November, 1922, Vol. 8, No. 5.
Mining in California, November, 1922, Vol. 18, No. 11.

Distribution of Publications.

The Bureau's publications are constantly in demand, requests for copies coming from all over the United States and foreign countries.

Publications were distributed during the month as follows:

Publications	Number Distributed
Report XI, State Mineralogist	2
Report XIV, State Mineralogist	7
Report XV, State Mineralogist	3
Report XVII, State Mineralogist	3
Mines and Mineral Resources of Colusa, etc.	2
Mines and Mineral Resources of Del Norte, etc.	3
Mines and Mineral Resources of Fresno, etc.	1
Mines and Mineral Resources of Imperial, etc.	5
Mines and Mineral Resources of Alpine, etc.	5
Mines and Mineral Resources of El Dorado, etc.	6
Mines and Mineral Resources of Los Angeles, etc.	3
Mines and Mineral Resources of Monterey, etc.	4
Mines and Mineral Resources of San Bernardino, etc.	6
Mines and Mineral Resources of Nevada County	3
Mines and Mineral Resources of Plumas County	2
Mines and Mineral Resources of Sierra County	3
Bulletin No. 6, California Gold Mill Practices	3
Bulletin No. 37, Gems, Jewelers Materials, Ornamental Stones of California	11
Bulletin No. 50, Copper Resources of California (Revised)	2
Bulletin No. 72, Geologic Formations of California	17
Bulletin No. 75, U. S. and California Mining Laws	20
Bulletin No. 76, Manganese and Chromium in California	3
Bulletin No. 78, Quicksilver Resources of California	5
Bulletin No. 85, Platinum Resources of California	8
Bulletin No. 89, Petroleum Resources of California with special reference to unproved areas	93
Bulletin No. 90, California Mineral Production for 1920, with County Maps	15
Mining in California (Monthly), Vol. 18, No. 11, November	3200
Mining in California (Monthly), Vol. 18, No. 10, October	10
Summary of Operations, California Oil Fields (Monthly), Vol. 8, No. 4, October, 1922	3000
County Maps and Registers of Mines	4
Copper Deposit Map	2
Inyo County Geological Map	3
Minaret Map	1
Tuolumne County Mineral Map	1
Geological Map of California, mounted	14
Lake County Map	1
Oil Field Maps	262
Map accompanying Bulletin 89	49

Mails and Files.

The Bureau maintains in addition to its correspondence file a mine report file which includes reports on some 7500 mines and mineral properties in California. Also there is available to the public a file of the permits granted to mining and oil corporations by the State Commissioner of Corporations.

During the month 774 letters were received and answered. They are practically all requests for information and the inquiries cover all phases of prospecting, mining and developing mineral deposits, reduction of crude minerals and marketing of refined products.

Drafting Room.

This is purely a workshop, and is the only branch of the Bureau that is not primarily at the service of the public. In the drafting room

well logs, maps, sketches, etc., are prepared for the many publications and reports which are under way at all times.

Changes in Personnel.

Announcement is authorized of the resignation of Mr. W. W. Thayer, as secretary, who leaves the State Mining Bureau after a service of seventeen years in the department.

Mr. Walter W. Bradley, for several years past statistician and curator of the State Mining Bureau, has been promoted to the position of deputy state mineralogist, which position will combine the duties formerly exercised by the 'chief mining engineer' and the 'secretary.' With additional clerical assistance, Mr. Bradley will also supervise the work of the statistical division.

DIVISION OF MINERALS AND STATISTICS.

Statistics, Museum, Laboratory.

WALTER W. BRADLEY, Deputy State Mineralogist.

STATISTICS.

California produces commercially at least fifty different mineral substances, with a total annual value averaging in recent years in excess of $250,000,000. There are several thousand operating properties, including mines, quarries, oil and gas wells, mineral springs, gravel pits, mills and smelters. The task of compiling accurate and dependable statistics covering these activities is a difficult one, requiring care and a technical knowledge of properties and processes.

Blank report forms for the 1922 data were mailed to the operators, in January, 1923, followed by a 'second request' early in March. At present writing (March 15), the majority of the reports are in hand. Data for several substances are now complete and have been compiled, being presented herewith.

The data at hand indicate that there was no production in California of the following substances, which have at one time or another in the past been on the active list here: Antimony, bismuth, cadmium, mica, molybdenum, nickel, nitrates, serpentine, sulphur, strontium, tin, tungsten, vanadium.

ALUMINUM.

Bibliography: Bulletins 38, 67. U. S. G. S., Min. Res. of U. S.

To date there has been no commercial production of aluminum ore in California. The first authentic find of bauxite in this state was noted in the April, 1922, issue of 'Mining in California' (see Report XVIII, page 198; also 'Pacific Mining News,' p. 13, May, 1922). It is in Riverside County, southeast of Corona, but as yet undeveloped.

Minerals containing aluminum are abundant, the most widely distributed being the clays. There are only two, however, thus far of consequence, commercially, in the production of the metal: bauxite (to which may be added the related, hydrated oxides, hydrargillite and diaspore), and cryolite. Cryolite is found in commercial quantities only in South Greenland, and was formerly the only ore of aluminum used, being still employed as a flux in the extraction of the metal. Bauxite has been, for some years, the most important source of aluminum and its salts. Its color varies from gray to red, according to the amount of iron present, the composition ranging usually between the following limits: Al_2O_3, 30%–60%; Fe_2O_3, 3%–25%; SiO_2, 0.5%–20%; TiO_2, 0.0%–10%. Besides its reduction to the metal, bauxite is also utilized in the maufacture of: aluminum salts, refractory bricks, alundum (fused alumina) for use as an abrasive; and in the refining of oil (stated to be of growing importance). The most important producing countries, both of bauxite and the metal, are the United States and France, the former yielding more than 60 per cent of the world's output. In 1913 France led.

Because of its light weight (2.58 specific gravity), the metal, aluminum, has many important industrial uses, particularly in the manufacture of aeroplanes, airships, automobiles, cooking utensils, and electrical

apparatus. The use of aluminum dust in place of zinc dust for precipitating precious metal from cyanide solutions is increasing. In the Thermit process of welding and casting, aluminum in fine grains or filings is mixed with the oxide (usually iron oxide) to be reduced.

Present quotations for aluminum are 23¢–24¢ per pound, according to grade, for the refined metal.

ANTIMONY.

Bibliography: State Mineralogist Reports VIII, X, XII, XIII, XIV, XV, XVII. Bulletin 38.

Production of antimony in California has been irregular, and small in amount except during the year 1916 when the high war-time prices permitted American producers, for a short period, to compete with Chinese antimony. The principal commercial production of antimony in California has come from Kern, Inyo, and San Benito counties, and other occurrences have been noted in Nevada, Riverside, and Santa Clara counties. The commonest occurrence is in the form of the sulphide, stibnite; but in the Kernville, and Havilah districts in Kern County there were notable deposits of the native metal, being among the few localities of the world where native antimony has been found.

California producers claim that they can not operate profitably unless the price of antimony be above 12 cents per pound. Present New York quotations are around 8 cents per pound.

Pure antimony metal, and manufactured antimony compounds are of considerable importance as pigments in the ceramic industry. The most important use of the metal, commercially, is in various alloys, particularly type-metal (with tin and lead), babbitt (with tin and copper), and britannia metal (with tin and copper).

The production of antimony in California by years since 1887 has been as follows:

Year	Tons	Value	Year	Tons	Value
1887	75	$15,500	1900	70	$5,700
1888	100	20,000	1901	50	8,350
1889			1902		
1893	50	2,250	1915	510	35,666
1894	150	6,000	1916	1,015	64,793
1895	33	1,485	1917	158	18,786
1896	17	2,320	1918		
1897	20	3,500			
1898	40	1,200	Totals	2,363	$199,050
1899	75	13,500			

ARSENIC.

Bibliography: Bulletin 67. U. S. G. S., Min. Res. of U. S.

Arsenic is found in a number of localities in California in the mineral arsenopyrite (FeAsS), which is frequently gold bearing; and in scorodite ($FeAsO_4+2H_2O$), an oxidation product of arsenopyrite. The occurrence of realgar (AsS) has also been noted (see Report XVIII page 197). To date, there has been no commercial output of arsenic from California ores. The principal source of the arsenic of commerce

in the United States has been as a by-product from the metallurgical treatment of copper, gold, and lead ores. It is usually recovered in the form of the tri-oxide, or 'white arsenic,' for which there is a demand for the preparation of insecticides, for use in agriculture and horticulture, and especially against the cotton-boll weevil in the southern states.

BARYTES.

Bibliography: State Mineralogist Reports XII, XIV, XV, XVII. Bulletin 38, Eng. & Min. Jour.-Press, Vol. 114, p. 109, July 15, 1922; Vol. 115, pp. 319-324, Feb. 17, 1923.

The output of crude barytes in California during 1922 was 3,370 tons valued at $18,925, as compared with 1921 production of 901 tons, worth $4,809. This included, in part, witherite ($BaCO_3$) from the deposit at El Portal, Mariposa County, which yields both the sulphate and carbonate. Most of the output of barytes in California, at present, is being utilized in the manufacture of lithopone.

The principal uses for barytes after washing and grinding, are as an inert pigment and filler in paint, paper, linoleum, oilcloth and rubber manufacture, and in the preparation of lithopone and a number of chemicals. The most important of such chemicals, other than lithopone, are: barium binoxide (used in preparation of hydrogen peroxide); barium carbonate (used by pressed brick and by rubber manufacturers to neutralize sulphur content); barium chloride (used in battery plates, and as a mordant by dry-color manufacturers, and in tanning leather); barium nitrate (used in munitions and in making 'red fire' material); barium sulphate precipitated, or 'blanc fixe' (used in rubber manufacture; for painting on interior steel of battleships and other sea-going vessels; also as a detector in taking X-ray pictures of the human body).

More than half of the total tonnage of barytes utilized in the United States is taken in the manufacture of lithopone. This is a chemically-prepared, white pigment containing about 70% barium sulphate and 30% zinc sulphide, and is one of the principal constituents of 'flat' wall paints now so extensively used in office buildings and hospitals, replacing both paper and calcimine wall finishes. Present quotations for barytes vary from $5 to $9 per ton, crude, f. o. b. rail-shipping point, depending on quality. Most barite has to be washed and acid-treated to remove iron stains or other impurities before being suitable for paint use.

Known occurrences of this mineral in California are located in Inyo, Los Angeles, Mariposa, Monterey, Nevada, San Bernardino, Shasta and Santa Barbara counties. The deposit at El Portal, in Mariposa County, has given the largest commercial production to date, in part witherite (barium carbonate, $BaCO_3$). The 1915 output was the first commercial production of the carbonate in the United States of which we have record. In 1916-1920, some tonnage of barytes came from a deposit opened up on Fremont's Peak, Monterey County, near the line of San Benito County; in 1919-1922, shipments were made from Nevada County. Shasta County is in the list for 1921-1922.

The first recorded production of barytes in California, according to the statistical reports of the State Mining Bureau, was in 1910. The annual figures are as follows:

Year	Tons	Value	Year	Tons	Value
1910	860	$5,640	1918	100	$1,500
1911	309	2,207	1919	1,501	18,065
1912	564	2,812	1920	3,029	20,795
1913	1,600	3,680	1921	901	4,809
1914	2,000	3,000	1922	3,370	18,925
1915	410	620			
1916	1,606	5,516	Totals	20,670	$113,202
1917	4,420	25,633			

BISMUTH.

Bibliography: Bulletins 38, 67. Am. Jour. Sci. 1903, Vol. 16.

Several bismuth minerals have been found in California, notably native bismuth and bismite (the ochre) in the tourmaline gem district in San Diego and Riverside counties near Pala. Other occurrences of bismuth minerals, including the sulphide, bismuthinite, have been noted in Inyo, Fresno, Nevada, Tuolumne, and Mono counties, but only in small quantities. The only commercial production recorded was 20 tons valued at $2,400, in 1904, and credited to Riverside County.

In 1917, a few pounds of bismuthinite (Bi_2S_3) with associated bismutite ($Bi_2CO_5.H_2O$), was taken out at the United Tungsten Copper mine, in the Morongo district, San Bernardino County. It is associated with scheelite in a contact deposit between limestone and granite.

Recovery of bismuth from blister copper in the electrolytic refinery has been noted,[1] ranging as high as 27.3 pounds of metallic bismuth per 100 tons of blister copper from the Iron Mountain, Shasta County, ores. In the United States, the principal recovery of bismuth is obtained as a by-product from the refining of lead bullion.

The uses of bismuth are somewhat restricted, being employed principally in the preparation of medicinal salts, and in low melting-point or cliché alloys. These alloys are utilized in automatic fire sprinkler systems, in electrical fuses, and in solders.

Present quotations for bismuth are $2.55 per pound for the refined metal.

CADMIUM.

Bibliography: U. S. G. S., Min. Res. of U. S., 1908, 1918.

During 1917 and 1918, cadmium metal was recovered by the electrolytic zinc plant of the Mammoth Copper Company in Shasta County. It was shipped in the form of 'sticks' and amounted to a total of several thousand pounds for the two years, the exact figures being concealed under 'Unapportioned.' That was the first, and thus far the only, commercial production of cadmium recorded from California ore. Cadmium there occurs associated with zinc sulphide, sphalerite, probably as the sulphide, greenockite. Cadmium also occurs in the Cerro Gordo Mine, Inyo County, associated with smithsonite (zinc carbonate).

There are several cadmium minerals, but none of them occur in sufficient quantities individually to be profitable as distinct ores. The cadmium of commerce is derived as a by-product in the reduction of

[1]Trans. Am. Inst. Min. Eng., Vol. 47, pp. 217–218.

zinc minerals and ores, in nearly all of which it occurs in at least minute proportions, the average ratio being about 1 of cadmium to 200 of zinc. As cadmium behaves metallurgically much the same as zinc, it constitutes a fraction of 1 per cent of nearly all metallic zinc.

Cadmium is produced in United States in two forms—metallic cadmium and the pigment, cadmium sulphide. The principal use of the metal is in low-melting point, or cliché alloys, and its salts are utilized in the arts, medicine, and in electroplating. The sulphide is employed as a paint pigment, being a strong yellow, which is unaffected by hydrogen sulphide gas from coal smoke. It is also employed in coloring glass and porcelain. Cadmium cliché metal is stated to be superior to the corresponding bismuth alloy, for making stereotype plates. Cadmium is also used in bronze telegraph and telephone wires, and gives some promise of being utilized in electroplating.

Present quotations for cadmium are $1.15 per pound for the refined metal.

COBALT.

Bibliography: Report XIV; Bulletin 67. U. S. G. S., Min. Res. of U. S., 1912, 1918.

Occurrences of some of the cobalt minerals have been noted in several localities in California, but to date no commercial deposits have been developed. Some of the copper ores of the foothill copper belt in Mariposa and Madera counties have been found to contain cobalt up to 3%.

The most important use of cobalt is in the manufacture of the alloy, stellite, in which it is combined with chromium, for making high-speed lathe tools, and non-tarnishing cutlery and surgeons' appliances. The metal is also used in electroplating, similarly to nickel; and the oxide, carbonate, chloride, sulphate and other salts are used in ceramics for coloring. Some of the organic salts of cobalt (acetate, resinate, oleate) are employed as 'driers' in paint and varnish.

Present quotations for cobalt are $2.65–$2.85 per pound for the refined metal.

GRAPHITE.

Bibliography: State Mineralogist Reports XIII, XIV, XV, XVII. Bulletin 67. U. S. G. S., Min. Res., 1914, Pt. II.

Graphite has been produced from time to time in the State, coming principally from Sonoma and Los Angeles counties. It is difficult for these deposits, which must be concentrated, to compete with foreign supplies, which go on the market almost directly as they come from the deposit. Graphite ores are concentrated with considerable difficulty, and the electric process of manufacturing artificial graphite from coal has been perfected to such a degree that only deposits of natural graphite of a superior quality can be exploited with any certainty of success.

According to the U. S. Geological Survey, operators in this country who are working disseminated flake deposits must depend on their No. 1 and 2 flake for their profit. Graphite dust is merely a by-product and is salable only at a low price. Improved methods of graphite milling adopted promise to increase largely the production of flake of better grade.

The principal value of graphite is on account of its infusibility and resistance to the action of molten metals. It is also largely used in the manufacture of electrical appliances, of 'lead' pencils, as a lubricant, as stove polish, paints, and in many other ways. Amorphous graphite, commonly carrying many impurities, brings a much lower price. For some purposes, such as foundry facings, etc., the low-grade material is satisfactory. Among the newer uses for graphite is the prevention of formation of scale in boilers. The action is a mechanical one. Being soft and slippery, the graphite prevents the particles of scale from adhering to one another or to the boiler and they are thus easily removed.

The price increases with the grade of material, the best quality crystalline variety being quoted at present at 6¢–6½¢ per pound (Ceylon lumps); with American flake at 4¢–5¢ per pound f.o.b. mine.

The coarser flakes are necessary for crucibles, as they help to bind the clay together in addition to their refractory service. Since the close of hostilities in Europe, prices have declined to pre-war levels; and imports have been resumed from Ceylon, Canada, Madagascar, Mexico and Korea, of a total of 7496 tons valued at $452,076 in 1921.

Occurrence of graphite has been reported at various times from Calaveras, Fresno, Imperial, Los Angeles, Mendocino, San Bernardino, San Diego, Siskiyou, Sonoma and Tuolumne counties.

During 1922 an increased production was reported from Los Angeles County. It was concentrated from a disseminated ore, and was used for paint and foundry facing. As there was but a single operator, the figures are concealed under the 'Unapportioned' item. The production, by years, has been as follows:

Year	Pounds	Value
1901	128,000	$4,480
1902	84,000	1,680
1903		
1913	2,500	25
1914		
1915		
1916	29,190	2,335
1917		
1918		
1919	*770,000	37,225
1920		
1921	*624,000	26,160
1922		
Totals	1,637,690	$71,905

*Annual details concealed under 'Unapportioned,' on account of a single producer.

INFUSORIAL AND DIATOMACEOUS EARTHS.

Bibliography: State Mineralogist Reports II, XII, XIII, XIV, XV, XVII, XVIII. Bulletins 38, 67. Am. Inst. Min. Eng., Bull. 104, August, 1915, pp. 1539-1550. U. S. Bur. of Mines, Rep. of Investigations: Serial No. 2431, Jan., 1923.

Infusorial and diatomaceous earths—sometimes called tripolite—are very light and extremely porous, chalk-like materials composed of pure silica (chalk, being calcareous) which have been laid down under water and consist of the remains of microscopical infusoria and diatoms.

The former are animal remains, and the latter are from plants. The principal commercial use of this material is as an absorbent. It is also employed in the manufacture of scouring soap and polishing powders; for filtration purposes; in making some classes of refractory brick; and as an insulating medium both in heating and refrigeration. It is a first-class nonconductor of heat, where high temperatures are employed, such as around steel and gas plants and power houses. In such cases, it is built in as an insulating layer in furnace walls. In Germany, under the name 'kieselguhr,' it was used as an absorbent for nitroglycerine in the early manufacture of dynamite.

As a nonconductor of heat it has been used alone or with other materials as a covering for boilers, steam pipes, and safes and in fireproof cements. It is used largely by paint manufacturers as a wood filler. Boiled with shellac it is made into records for talking machines. It has been used for absorbing liquid manures so that they could be utilized as fertilizers, and as a source of silica in making water-glass as well as in the manufacture of cement, tile glazing, artificial stone, ultra-marine and other pigments of aniline and alizarine colors, paper filling, sealing wax, fireworks, hard-rubber objects, matches, and papier maché, and for solidifying bromine. For making insulating brick the material is sawed into blocks, and for all other purposes it is ground and screened.

The most important deposits in California thus far known are located in Monterey, Orange, San Luis Obispo, and Santa Barbara counties. The Santa Barbara material is diatomaceous and is of a superior quality. Infusorial earth is also found in Fresno, Kern, Los Angeles, Plumas, San Benito, San Bernardino, San Joaquin, Shasta, Sonoma, and Tehama counties.

The following description of the deposit and plant of the Celite Products Company at Lompoc, Santa Barbara County, is quoted from a recent paper published by the U. S. Bureau of mines:[1]

"The character of the material varies in different parts of the bed and only selected parts where the overburden is light, are quarried. Also, certain parts of the bed are used for specific purposes. After cleaning off the overburden, the diatomaceous earth is quarried by means of a channeling machine developed by the company. Cuts are made across the face 4 feet deep and 4 feet apart. The largest part of the production is used for insulating brick, which are sawed on the ground from the blocks cut by the channeling machines. The machine used for sawing the brick was also developed by the company. The material desired for grinding is quarried, after channeling, by pick and shovel and loaded by hand into horse-drawn wagons and then hauled to a drying yard. The brick are hauled to a drying yard in light tram cars. After sun-drying, the brick are hauled to the railroad, and the other product to the mill in motor trucks.

"At the mill, the sun-dried diatomaceous earth is fed by hand into an impact pulverizer, which is moved along the bottom of the storage bin. The pulverized material is drawn through galvanized iron tubing by an exhaust fan to the main building where it is packed for shipment in bags. The unbroken single diatoms are desired for filtering and some other uses. The dust, consisting of the finer particles and broken diatoms, which does not settle in the bins of the main building, is drawn into a bag house where it is filtered out of the air. This material is used for polishes and other similar purposes. All crushing is done dry.

"The Kieselguhr is nearly pure silica and has the capacity of absorbing several times its weight of liquids. Dr. Herbert Insley, petrologist, U. S. Bureau of Mines, examined some of the samples under the microscope and made the following report:

'This material is very light in weight due in part to its great porosity. Under the microscope, the material was found to be made up almost wholly of the tests or skeletons of diatoms. These tests are composed of practically pure silica. The silica is evidently amorphous for there is no evidence of double refraction between crossed nicols. Most of the skeletons were unbroken. Complete skeletons more than three-tenths of a millimeter in greatest dimension were not observed, although some of the skeletons of which fragments were observed must have been at least seven-tenths of a millimeter in length. Disk-like diatoms containing hexagonal perforations or depressions and long, slender spine-like diatoms are very common.'

"Photomicrographs made by Dr. Insley show considerable fine dust and many sharp-edged particles.

"The deposit is damp when first exposed, but during the summer months, the air is very dry and the wind blows almost continuously, hence the surface is soon dried. Since the kieselguhr is very light, the dust is easily picked up by the wind."

[1]Gardner, E. D., Mining diatomaceous earth at Lompoc, California: U. S. B. of M., Reports of Investigations Serial No. 2431, Jan. 1923.

As over 95 per cent of the output in California is from a single operator, we have concealed the exact figures under the 'Unapportioned' item in the state and county totals. There were three operators in 1922 in San Luis Obispo and Santa Barbara counties.

Total Production of Diatomaceous Earth in California.

The first recorded production of these materials in California occurred in 1889; total amount and value of output, to date, are as follows:

Year	Tons	Value	Year	Tons	Value
1889	39	$1,335	1907	2,531	$28,948
1890			1908	2,950	32,012
1891			1909	500	3,500
1892			1910	1,843	17,617
1893	50	2,000	1911	2,194	19,670
1894	51	2,040	1912	4,129	17,074
1895			1913	8,645	35,968
1896			1914	12,840	80,350
1897	5	200	1915	12,400	62,500
1898			1916	15,322	80,649
1899			1917	24,301	127,510
1900			1918	35,963	189,459
1901			1919	40,200	217,800
1902	422	2,532	1920	60,764	1,056,260
1903	2,703	16,015	1921 } 1922 }	*90,739	1,016,675
1904	6,950	112,282			
1905	3,000	15,000			
1906	2,430	14,400	Totals	330,971	$3,151,296

*Annual details concealed under 'unapportioned.'

LITHIA.

Bibliography: State Mineralogist Reports II, IV, XIV. Bulletins 38, 67.

Lithia mica, lepidolite (a silicate of lithium et al.) utilized in the manufacture of artificial mineral water, fireworks, glass, etc., has been mined in San Diego County since 1899, except between 1905 and 1915. Some amblygonite, a lithium phosphate, has also been obtained from pockets associated with the gem tourmalines. In 1922 there was a slight drop in the yield of lepidolite, the output being utilized in glass manufacture. As there was only a single producer, the figures are concealed under the 'unapportioned' item. The average value reported was $15.30 per ton, f.o.b. rail-shipping point.

Lithia mica total production in the state has been as follows:

Year	Tons	Value	Year	Tons	Value
1899	124	$4,600	1916	71	$1,065
1900	440	11,000	1917	880	8,800
1901	1,100	27,500	1918	4,111	73,998
1902	822	31,880	1919	800	14,400
1903	700	27,300	1920	10,046	153,502
1904	641	25,000	1921 } 1922 }	*1,365	20,781
1905	25	276			
1906					
1915	91	1,365	Totals	21,216	$401,467

*Annual details concealed under 'Unapportioned.'

According to the U. S. Geological Survey, the only other production of lithium minerals in the United States outside of California in recent years has been spodumene from South Dakota.

MAGNESITE.

Bibliography: State Mineralogist Reports XII, XIII, XIV, XV, XVII; Bulletin 38, U. S. G. S., Bulletins 355, 540; Min. Res. 1913, Pt. II, pp. 450–453. Min. & Sci. Press, Vol. 114, p. 237, "Magnesite"—Hearings before the Comm. on Ways and Means, House of Repr., on H. R. 5218, June 16, 17 and July 17, 1919. Eng. Soc. W. Penn., Proc. 1913, Vol. 29, pp. 305–388, 418–444. Eng. & Min. Jour.-Press, Vol. 114, July 29, and Dec. 2, 1922.

Occurrence.

Magnesite is a natural carbonate of magnesium, and when pure contains 52.4% CO_2 (carbon dioxide) and 47.6% MgO (magnesia). It has a hardness of 3.5 to 4.5, and specific gravity of 3 to 3.12. It is both harder and heavier than calcite (calcium carbonate), and also contains a higher percentage of CO_2, as calcite has but 44%.

Most of the California magnesite is comparatively pure, and is ordinarily a beautiful, white, fine-grained rock with a conchoidal fracture resembling a break in porcelain. The Grecian magnesite is largely of this character; while the Austrian varieties usually contain iron, so that they become brown after calcining. The Washington magnesite resembles dolomite and some crystalline limestones in physical appearance. Its color varies through light to dark gray, and pink.

In California the known deposits are mostly in the metamorphic rocks of the Coast Ranges and Sierra Nevada Mountains, being associated with serpentine areas. The notable exceptions are the sedimentary deposits, at Bissell in Kern County and at Afton in San Bernardino County. Several thousand tons have been shipped from the Bissell deposit; and small shipments have been made from the Afton property.

The Washington deposits are associated with extensive strata of dolomitic limestone. The magnesite there appears to contain more iron than most of the California mineral, which makes it desirable for the steel operators. However, recent experience has proven that several California localities have sufficient iron in their magnesite to be serviceable in the steel furnaces. This is particularly true of the Refractory Magnesite Company's mine near Preston in Sonoma County, and the White Rock Mine at Pope Valley, Napa County.

Uses.

The principal uses include: Refractory linings for basic open-hearth steel furnaces, copper reverberatories and converters, bullion and other metallurgical furnaces; in the manufacture of paper from wood pulp; and in structural work, for exterior stucco, for flooring, wainscoting, tiling, sanitary kitchen and hospital finishing, etc. In connection with building work it has proven particularly efficient as a flooring for steel railroad coaches, on account of having greater elasticity and resilience than 'Portland' cement. For refractory purposes the magnesite is 'dead burned'—*i. e.*, all or practically all of the CO_2 is expelled from it. For cement purposes it is left 'caustic'—*i. e.*, from 2% to 10% of CO_2 is retained. When dry caustic magesite is mixed with a solution of

magnesium chloride ($MgCl_2$) in proper proportions, a very strong cement is produced, known as oxychloride or Sorel cement. It is applied in a plastic form, which sets in a few hours as a tough, seamless surface. It has also a very strong bonding power, and will hold firmly to wood, metal, or concrete as a base. It may be finished with a very smooth, even surface, which will take a good wax or oil polish. As ordinarily mixed there is added a certain proportion of wood flour, cork, asbestos, or other filler, thereby adding to the elastic properties of the finished product. Its surface is described as 'warm' and 'quiet' as a result of the elastic and nonconducting character of the composite material. The cement is frequently colored by the addition of some mineral pigment to the materials before mixing as cement.

The desirable qualities of any flooring material (cost not considered) are listed for purposes of analysis or comparison under eighteen heads, as follows: Cleanliness (sanitary qualities), quietness, immunity from abrasion (surface wear), resilience, immunity from slipperiness, appearance, waterproof character, plasticity, warmth (thermal insulation), life (immunity from deterioration with age), acid-proof character, alkali-proof character, fire resistance, elasticity, crushing strength, structural strength (rupture), immunity from expansion and contraction, and lightness. The importance of these several qualities varies with the varying requirements to be met; for instance, in some places, as in hospitals, cleanliness is one of the prime considerations; in other places immunity from abrasion might be one of the principal requisites. As to most of these qualities the conclusion is reached that the magnesia cement affords one of the most satisfactory flooring materials for many purposes, such as in kitchen, laundry, toilet and bathrooms, corridors, large rooms or halls in public or other buildings, including hospitals, factories, shops and restaurants.

There is no doubt that the material is steadily coming into more general recognition and favor for these uses. For a few special uses it is more or less disqualified: as an instance, it is not suited for construction of swimming tanks or for conditions of permanent wetness, since under constant immersion it gradually softens, although it is said to withstand intermittent wetting and drying and is recommended for shower baths. Naturally it is not acid-proof and not wholly alkali-proof, which might be a disadvantage in use for laboratory floors and tables; but these are rather special requirements. Its cost per square foot is given (in 1913) as 25 to 33 cents, depending on area, which is estimated to be lower than marble, cork, rubber, clay or mosaic tile, slate or terrazzo, although more expensive than wood, asphalt, linoleum or Portland cement.

In the discussion of the subject (see Bibliography) the causes of failure are ascribed to uncertain climatic changes, lack of uniformity in the mixtures used, lack of care on the part of those handling the materials, possible deterioration of materials used through exposure (either before or after mixing), lack of proper preparation of foundations on which the material is to be laid, and, as a very important factor, experience or nonexperience in the manipulation or actual laying and troweling of the material. Data concerning the percentages of magnesium chloride and of ground calcined magnesia and data concerning the character and quantity of filler and color added to the commercial preparations are naturally guarded as trade secrets by the firms already in the

business. The examination and standardization of the raw materials used, and of acceptable filler materials, and the establishment of standard proportions for the mixtures would seem to be about the only satisfactory way of attacking the problem.

The condition of the calcination of magnesite for cement uses is important, as the same material may undoubtedly be greatly varied in its reacting properties by differing treatment in the kiln. It is generally agreed that the magnesite for cement use must be comparatively free from lime, as lime has a greater tendency to reabsorb water and carbon dioxide than the magnesia, thereby causing swelling, and is therefore not so permanent in the completed cement as a pure magnesia material. The fillers used may constitute 10% to 40% of the whole cement, and commonly consist of ground marble, sand, sawdust, cork, asbestos or other materials. As an example of the formulas used in mixing such cements the following are quoted:[1]

Mixtures for the underlying or coarser layer.

[Parts by weight.]

1. 15 parts magnesia.
   10 parts magnesium chloride solution, 20° Baumé.
   10 parts moist sawdust.
   (Sets in 36 hours.)

2. 10 parts magnesia.
   10 parts magnesium chloride solution, 28° Baumé.
   5 parts sawdust.
   (Sets in 16 hours.)

3. 20 parts magnesia.
   15 parts magnesium chloride solution, 20° Baumé.
   4 parts ground cork.
   (Sets in 24 hours.)

4. 5 parts magnesia.
   3 parts magnesium chloride solution, 20° Baumé.
   5 parts ashes.
   (Sets in 24 hours.)

Mixtures for overlying or surface layers.

[Parts by weight.]

1. 40 parts magnesia.
   33 parts magnesium chloride solution, 19° Baumé.
   10 parts asbestos powder.
   5 parts wood flour.
   1 part red ocher.
   (Sets in 24 hours.)

2. 25 parts magnesia.
   25 parts magnesium chloride, 21° Baumé.
   4½ parts wood flour, impregnated with 4½ parts Terpentinharzlösung.
   15 parts yellow ocher.
   (Sets in 30 hours.)

The magnesite used is the fine-ground calcined (not dead-burned) of certain specified kinds or place of derivation regularly sold for plastic purposes. This material commonly comes in paper-lined casks, barrels or boxes, in which form it is fairly permanent, but it deteriorates by exposure, absorbing carbonic acid and moisture from the air. If

[1]Scherer, Robert—Der Magnesit, sein Vorkommen, seine Gewinnung und technische Verwertung, pp. 216-217, A. Hartleben's Bibliothek; Wien und Leipzig, 1908.

carefully handled it can probably be kept unopened a year or more, but it should be used within a few weeks after being opened, even under most favorable conditions.

The use of magnesia cement has been suggested as a protecting coating for mine timbers, particularly against the fire hazard. The necessary qualities for any substance for such purpose have been summarized as follows: It should be resistant to abrasion, and to impact and structural stresses. It should be durable when subjected to the action of the elements, and stable to any minor derangements of the base on which it is placed. It must be relatively unaffected by changes in temperature, by the action of water, and should adhere to the material on which it is placed, and it should also be free from shrinkage cracks due to setting up the material, and have the ability to resist fire. Magnesite cement appears to fulfill the various conditions thus outlined.

It is stated that some metallic magnesium has been prepared electrolytically at Niagara Falls from magnesite.

For refractory purposes the calcined magnesite is largely made up into bricks, similar to fire-brick for furnace linings. It is also used un-consolidated, as 'grain' magnesite. For such, an iron content is desirable, as it allows of a slight sintering in forming the brick. Dead-burned, pure, magnesia can not be sintered except at very high temperatures; and it has little or no plasticity, so that it is hard to handle. Its plasticity is said to be improved by using with it some partly calcined or caustic magnesite. Heavy pressure will bind the material sufficiently to allow it to be sintered.

A coating of crushed magnesite is laid on hearths used for heating steel stock for rolling, to prevent the scale formed from attacking the fire-brick of the hearth.

Imports and Domestic Production.

Reports of the U. S. Bureau of Foreign and Domestic Commerce show imports of calcined magnesite to have been 172,591 long tons in 1913; 144,747 in 1914, and 63,347 in 1915; most of it coming from Austria-Hungary and some from Greece. For the same years the production of crude (from 2 to 2½ tons of crude ore required to yield one ton of the calcined) magnesite in California (the sole producer of those years, in the United States) was: 9632 short tons, 11,438 tons, 30,721 tons, respectively. For 1916 the California output leaped to 154,052 tons of crude and to 209,648 tons in 1917, but has dropped considerably since then on account of resumption of foreign importations, which totaled 52,483 long tons in 1921, valued at $776,384, being then admitted duty free. Shipments from Washington were begun late in 1916; and during the following three years assumed important proportions, but only a small tonnage was shipped in 1922.

The Tariff Act of 1922, which became effective September 22nd, last year, placed the following import duties on magnesite: Crude magnesite, $\frac{5}{16}$¢ per lb.; caustic-calcined magnesite $\frac{2}{3}$¢ per lb.; dead-burned and grain magnesite, not suitable for manufacture into oxychloride cements, 23/40¢ per lb.; magnesite brick, $\frac{3}{4}$¢ per lb. and 10% ad valorem. The figures of imports for 1922 after that date have not yet been published

by the U. S. Bureau of Foreign and Domestic Commerce, but for the nearly 10 months up to that time, the total was 112,159 long tons valued at $1,757,636, as compared with the figures shown in the preceding paragraph.

Output and Value.

In considering mineral production, the value of the crude material is used as far as practicable. Magnesite presents a peculiar example of a material which previous to 1916 was seldom handled on the market in the crude state. It is mainly calcined and ground before being considered marketable. From 2 to 2½ tons of crude material are mined to make one ton of the calcined. In the earlier reports an arbitrary value for the crude material at the mine was calculated from the above on the basis of the calcined value, there having been very little product shipped crude. On the contrary, however, considerable tonnages since 1916 have been shipped in the crude state, contracted for at prices ranging from $7 to $17 per ton, f. o. b. rail points. The average was $10.50 per ton, for 1922. This is the basis of the valuation used herein.

The production of crude magnesite in California during the year 1922 totaled 55,637 tons, valued at $594,665 f. o. b. rail-shipping point. This is an increase over the 47,837 tons and $511,102 in 1921.

The main hope for the future for California magnesite appears to be in the development of the plastic business, particularly in the territory west of the Rocky Mountains; and in the manufacture of refractory brick to be utilized mainly by the copper and lead smelters in the same district. It is possible that California magnesite may be sent via the Panama canal to the Atlantic seaboard; but, on account of our higher production costs, it is difficult to see how we can compete with the Grecian article at Atlantic ports.

Several plants are reported making refractory brick here from California magnesite. The ore from the White Rock Mine in Napa County, and that from the old Kolling (Refractory Magnesite Company) Mine, Sonoma County, is a natural ferro-magnesite and has found a ready market for refractory purposes.

In 1918, for the first time since Tulare County became an important producer of this mineral, it was surpassed in tonnage output for the year, but regained the lead in 1919, followed by Santa Clara and Napa counties, respectively. The same ranking was retained in 1920; but Santa Clara took the lead in 1921. The largest individual producer in 1920-1922 has been the Western Magnesite Development Co., in Santa Clara County, operated under lease by C. S. Maltby. A total of 24,091 tons was reported as shipped calcined by Californian mines in 1922, representing approximately 52,205 tons of crude ore.

Owing to increased building operations, and the duty on foreign importations, the outlook for magnesite is improving. Research work is being conducted by the larger operators to insure uniformity of product, and to work out formulae and mixtures for its application in the plastic trade. Present quotations (March) are reported at $14 per ton crude, f. o. b. California points, and $40 per ton calcined.

Production of crude magnesite for 1922, by counties, is given in the following table, with total crude value:

County	Tons	Value
Santa Clara	28,650	$301,875
Stanislaus	2,400	35,475
Tulare	17,223	181,842
Fresno, Napa, San Benito, Tuolumne*	7,364	75,473
Totals	55,637	$594,665

*Combined to conceal output of a single operator in each.

Total Magnesite Production of California.

The first commercial production of magnesite in California was made in the latter part of 1886 from the Cedar Mountain district,[1] southeast of Livermore, Alameda County. Shipments amounting to 'several tons' or 'several carloads' were sent by rail to New York; but there is apparently no exact record of the amount for that first year. The statistical records of the State Mining Bureau began with the year 1887, and the table herewith shows the figures for amount and value, annually, from that time. Shipments of magnesite from Napa County began in 1891 from the Snowflake Mine; from the Red Mountain deposits in Santa Clara County, in 1899; and from Tulare County in 1900.

Production of Magnesite In California, Since 1887.

Year	Tons	Value	Year	Tons	Value
1887	600	$9,000	1906	4,032	$40,320
1888	600	9,000	1907	6,405	57,720
1889	600	9,000	1908	10,582	80,822
1890	600	9,000	1909	7,942	62,588
1891	1,500	15,000	1910	16,570	113,887
1892	1,500	15,000	1911	8,858	67,430
1893	1,093	10,930	1912	10,512	105,120
1894	1,440	10,240	1913	9,632	77,056
1895	2,200	17,000	1914	11,438	114,380
1896	1,500	11,000	1915	30,721	283,461
1897	1,143	13,671	1916	154,052	1,311,893
1898	1,263	19,075	1917	209,648	1,976,227
1899	1,280	18,480	1918	83,974	803,492
1900	2,252	19,333	1919	44,696	452,094
1901	4,726	43,057	1920	83,695	1,033,491
1902	2,830	20,655	1921	47,837	511,102
1903	1,361	20,515	1922	55,637	594,665
1904	2,850	9,298			
1905	3,933	16,221	Totals	829,502	$7,981,223

[1]See U. S. Geol. Surv.; Mineral Resources of U. S., 1886, pp. 6 and 696.

MICA.

Bibliography: State Mineralogist Reports II, IV. Bulletins 38, 67.

No commercial production of mica has recently been reported in California. Production in previous years has been as follows:

Year	Tons	Value
1902	50	$2,500
1903	50	3,800
1904	50	3,000
Totals	150	$9,300

[1]"The different uses to which mica is put depend on its form—whether in sheets or in powder. Sheet mica is used in the electrical industry for glazing, and to some extent for other purposes. Ground mica is used chiefly in the decorative trades and in insulation.

"Sheet mica finds its greatest use in the electrical industry, where an insulating, noninflammable material is necessary. It is used in sheets and as washers and disks in dynamo-electric machinery, electric-light sockets, spark plugs, insulators, guards in rheostats, fuse boxes, and telephones. Flexible cloth and tape, covered with mica, find varied uses in electrical apparatus. Sheet mica is used for glazing the fronts of stoves and for making lamp chimneys and lamp shades. It is also used in spectacles, automobile shields, phonograph diaphragms, in windows where glass would be broken and in lantern transparencies.

"Ground mica is used for decoration in wall paper, to which it gives luster and brightness; in fancy paints, ornamental tiles, concrete, rubber goods, pipe and boiler coverings, insulating compounds, fireproof paints and coverings, patent roofing material, molded mica (ground mica mixed with shellac), and calico printing; as absorbent for nitroglycerin in the manufacture of 'mica powder,' in tempering steel; to a large extent as a lubricant for wooden bearings, or, mixed with oil, as a lubricant for metal bearings; and as a filler for various products. Tar and other roofing papers are coated with coarsely ground mica to prevent sticking when they are rolled for shipment. A possible value of ground mica as a chemical source of potash salts is indicated in a recent Geological survey report.[2]

"It is understood that sheet mica has come to be of importance as a war mineral through its use abroad as windows in masks worn for defense against asphyxiating gases, and for other uses where a transparent, noninflammable, nonshattering material is necessary, as in automobile goggles and in windows for armored cars."

Present New York quotations for No. 1 quality sheet mica are from 15c per lb. for 1½x2 inch to $3.60 per lb. for 6x6 inch, f. o. b. North Carolina, thumb trimmed; punch 8c, other grades, 25c to $3.25 according to size; flake 12c per lb.; scrap $25 per ton; f. o. b. Virginia points.

MOLYBDENUM.

Bibliography: Reports XIV, XVII. Bulletin 67. U. S. Bur. of Min., Bulletin 111. Proc. Colo. Sci. Soc., Vol. XI.

Molybdenum is used as an alloy constituent in the steel industry, and in certain forms of electrical apparatus. Included in the latter, is its successful substitution for platinum and platinum-iridium in electric contact-making and breaking devices. In alloys it is used similarly to and in conjunction with chromium, cobalt, iron, manganese, nickel, tungsten, and vanadium. The oxides and the ammonium salt have important chemical uses.

The two principal molybdenum minerals are: the sulphide, molybdenite; and wulfenite, lead molybdate; the former furnishing practically the entire commercial output. Molybdenite is found in or associated with acidic igneous rocks, such as granite and pegmatite. The chief commercial sources have been New South Wales, Queensland, and Norway, with some also from Canada.

[1]Schaller, W. T., Mica in 1916; U. S. Geol. Surv., Min. Res. of U. S. 1916, p. 304, 1917.
[2]Butler, B. S., Potash in certain copper and gold ores, with a note on muscovite by George Steiger; U. S. Geol. Survey Bull. 620, pp. 227–235, 1916.

Deposits of disseminated molybdenite are known in several localities in California, and in at least two places it occurs in small masses associated with copper sulphides. The only recorded commercial shipments of molybdenum ore in California were during the war, 1916-1918. Some development work has recently been done on a high-grade deposit at the head of the Kaweah River, Tulare County.

The 1917 output included some concentrates assaying up to 58% MoS_2, but the bulk of it was 1.5% ore which was shipped to Denver, Colorado, for concentration. That production came mainly from Shasta County, with smaller amounts from Inyo, Mono and San Diego counties. There were two concentrating plants built in California—one in each of the above first and last-named counties.

In the spring of 1918, a flotation plant operated for a short time by a lessee on the Boulder Creek mine, near Gibson Siding, Shasta County, made a small amount of 90% MoS_2 concentrate. The ore treated carried 2.6% MoS_2. There has been none produced in California since 1918.

Present quotations for molybdenum ore are @ 65¢ per pound for 85% MoS_2 concentrates, plus duty.

The California production of molybdenum ore by years is summarized in the following tabulation:

Year	Tons	Value
1916	8	$9,945
1917	243	9,014
1918	*	300
Totals	251	$19,259

*300 pounds of 90% MoS_2 concentrate.

NICKEL.

Bibliography: Reports XIV, XVII. U. S. G. S., Bulletin 640-D.

Nickel occurs in the Friday Copper Mine in the Julian District, San Diego County. The ore is a nickel-bearing pyrrhotite, with some associated chalcopyrite. Some ore has been mined in the course of development work, but not treated nor disposed of, as they were unable to get any smelter to handle it for them. Nickel ore has also been reported from other localities in California, but not yet confirmed.

Present quotations for nickel are 25¢-30¢ per pound, according to grade and quantity.

MUSEUM.

The Museum of the State Mining Bureau possesses an exceptionally fine collection of rocks and minerals of both economic and academic value. It ranks among the first five of such collections located in North America; and contains not only one or more samples of most of the known minerals found in California, but many specimens from other states and foreign countries as well.

Mineral specimens suitable for exhibit purposes are solicited, and their donation will be appreciated by the State Mining Bureau as well as by those who utilize the facilities of the collection. The Bureau supplies a set of forty typical minerals and ores, appropriately labeled, for study purposes to any public school in the state upon

request. During the past 30 days, a total of 431 visitors signed their names to the Museum register, and in addition there are many others daily who fail to take note of our request for their signatures.

LABORATORY.

FRANK SANBORN, Mineral Technologist.

A total of 273 samples was received and determined during the thirty-day period covered by this report. From this number is appended a list having a possible commercial value, judging only from the samples submitted. The name and address of the sender of any of these samples will be sent upon request if the reference number is given.

The eagerly active and partly successful attempts to exterminate the boll weevil in the cotton belts has resulted in many requests being made for the determination of arsenic, phosphates and potassium. The former is being used in preparing calcium arsenic to be used as an insecticide and the latter two in the making of fertilizers for use in the cotton fields.

15–32 Marble (variegated).
15–33 Quartz.
15–34 Arsenopyrite.
15–35 Witherite (barium carbonate).
15–36 Sericite-schist.
15–37 Cobaltite (sulph-arsenide of cobalt).
15–38 Rutile (titanium oxide).
15–39 Allanite (contains didymium, yttrium, cerium, etc.).
15–40 Sericite-schist; also opal.
15–41 Amphibole asbestos.
15–42 Sodium sulphate.

LIBRARY.

E. Cooney, Librarian.

In addition to the numerous standard works, authoritative information on many phases of the mining and mineral industry is constantly being issued in the form of reports and bulletins by various government agencies.

The library of the State Mining Bureau contains some five thousand selected volumes on mines, mining and allied subjects, and it is also a repository for reports and bulletins of the technical departments of federal and state governments and of educational institutions, both domestic and foreign.

It is not the dearth of the latter publications, but rather a lack of knowledge of just what has been published and where the reports may be consulted or obtained, that embarrasses the ordinary person seeking specific information.

To assist in making the public acquainted with this valuable source of current technical information, 'Mining in California' contains under this heading a list of all books and official reports and bulletins received during the month, with names of publishers or issuing departments.

Files of all the leading technical journals will be found in the library, and county and state maps, topographical sheets and geological folios. Current copies of local newspapers published in the mining centers of the State are available for reference.

The library and reading room are open to the public during the usual office hours, when the librarian may be freely called upon for all necessary assistance.

OFFICIAL PUBLICATIONS RECEIVED.

Governmental.

U. S. Geol. Survey:

Water Supply Paper No. 480—Surface Water of the United States, 1918, Part X—The Great Basin. By Nathan C. Grover and others.

Water Supply Paper No. 483—Surface Water of the United States, 1918, Part XII—North Pacific Drainage Basin, B. Snake River Basin. By Nathan C. Grover and others.

Water Supply Paper No. 508—Surface Water Supply of the United States, 1919-1920, Part VIII—Western Gulf of Mexico Basins. By Nathan C. Grover and others.

Bulletin No. 736-H—Stratigraphy of the El Dorado Oil Field, Arkansas, as Determined by Drill Cuttings. By James Gilluly and K. C. Heald.

Bulletin No. 686—Structure and Oil and Gas Resources of the Osage Reservation, Oklahoma and Structure Maps. By David White and others.

Professional Paper No. 131-D—A Geological Reconnaissance in the Gulf Coastal Plain of Texas Near the Rio Grande. By A. C. Trowbridge.

Mineral Resources:

Gold, Silver, Copper, Lead and Zinc in Nevada in 1921. By V. C. Heikes.

Mineral Waters in 1921. By W. D. Collins.

Gold, Silver, Copper, Lead and Zinc in Idaho and Washington in 1921. By C. N. Gerry.

U. S. Department of Commerce Reports February 19, 1923:

U. S. Coast and Geodetic Survey:

Serial No. 165—Utah, Washington Arc of Precise Triangulation. By C. V. Hodgson.

Serial No. 178—Triangulation in Texas, Rio Grand Arc. By Clem L. Garner.
Serial No. 169—Triangulation in Massachusetts. By O. P. Sutherland.
Serial No. 177—Precise Leveling in Texas. By H. G. Ayers.
Serial No. 182—Precise Traverse and Triangulation in Indiana. By Charles A. Mourhess and Jasper S. Bilby.
Serial No. 194—California-Oregon Arc of Precise Triangulation. By Hugh C. Mitchell and E. W. Eickelberg.
Serial No. 204—Precise Traverse, Racine, Wisconsin to Vandalia, Illinois. By Charles Mourhess and Walter D. Sutcliffe.

U. S. Bureau of Mines:

Technical Paper No. 301—Proposed Method for Reducing Mineral Waste in the Wisconsin Zinc District, Wisconsin. By Will H. Coghill and C. O. Anderson.
Technical Paper No. 323—Specifications for Petroleum Products and Methods for Testing.
Technical Paper No. 327—Accidents at Metallurgical Works in the United States During the Calendar Year 1921. By William W. Adams.

Reports of Investigations:

Serial No. 2429—Quarry Problems from the Engineer's Viewpoint. By Oliver Bowles (Mineral Technologist, U. S. B. M.)
Serial No. 2430—Additions, Removals and Changes in Permissible List of Explosives from March 15 to December 31, Inc., 1922. By S. P. Howell, (Explosives Engineer, B. M.).
Serial No. 2431—Mining Diatomaceous Earth at Lompoc, Calif. By E. D. Gardner.
Serial No. 2432—Coal Analyses from Twenty-five Laboratories Compared. By A. C. Fieldner (Superintendent, Pittsburgh Experiment Station), H. M. Cooper (Chemist) and F. D. Osgood (Assistant Chemist), U. S. B. M.
Serial No. 2433—Metallurgical Possibilities of the Descloizite Ores at Goodsprings, Nevada. By H. A. Doerner (Metallurgist, Rare and Precious Metals Experiment Station, U. S. B. M.) in cooperation with Mackay School of Mines, University of Nevada.
Serial No. 2434—Permissible Electric Drills. By H. B. Brunot (Junior Electrical Engineer, B. M.).
Serial No. 2435—Explosives Used in November, 1922. By W. W. Adams, (Statistician, U. S. B. M.).
Serial No. 2436—Effect of Cartridge Diameter on the Strength and Sensitiveness of Certain High Explosives. By Spencer P. Howell (Explosives Engineer, B. M.) and J. E. Crewshaw, (Explosives Testing Engineer, B. M.).
Serial No. 2437—List of Publications on Ceramic Investigations, U. S. B. M.
Serial No. 2438—Tests of Large Boiler Fired with Powdered Coal. By Henry Kreisinger (Research Engineer, Combustion Engineering Corporation, New York) and John Blizard (Fuel Engineer, U. S. B. M.).
Serial No. 2439—Explosives Used in December, 1922. By W. W. Adams (Statistician, U. S. B. M.).
Serial No. 2440—Subject List of Reports of Investigations Issued During 1922.
Serial No. 2441—Report of Lignite Carbonizing Experiments Conducted at Grandforks in 1922. By W. W. Odel (Fuel Engineer, B. of M.).
Serial No. 2442—The Use of Vapor-Tight Tankage in the Oil Fields. By Ludwig Schmidt (Assistant Petroleum Engineer, U. S. B. M.).
Serial No. 2443—Combustion Products from a Radiant-Type Natural Gas Heater and Suggestions Regarding Its Operation. By George W. Jones, W. P. Yant and L. B. Berger.
Serial No. 2444—Seventh Semi-Annual Motor Gasoline Survey. By N. F. Le Jeune (Assistant Chemist, B. M.) and L. G. Marsh (Asst. Chemist, B. M.).
Serial No. 2445—The Value of Oxygen Breathing Apparatus to the Mining Industry. By E. H. Denny (Mine Safety Engineer, B. M., and Assistant Secretary of the Joseph A. Holmes Safety Association) and M. W. Von Bernwitz (Mining and Metallurgical Engineer, B. M.).
Serial No. 2446—Rock Loading at Lime-Plant Quarries. By Oliver Bowles (Mineral Technologist, U. S. B. M.).
Serial No. 2447—Condensation Losses Due to Transmission of Carburetted Water Gas Under High Pressures. By W. A. Dunkley (Illuminating Gas Engineer, B. M.).

Serial No. 2448—Preliminary Investigation of Brattice Cloth Used in Coal Mining. By George S. Rice (Chief Engineer, U. S. B. M. and E. H. Denny (Mine Safety Engineer, U. S. B. M.).

Serial No. 2449—Bureau of Mines Approval System as Applied to Permissible Storage Battery Locomotives. (First Complete Investigation Under Schedule 15). By L. C. Ilsley (Elecrrical Engineer, U. S. B. M.) and H. B. Brunot (Junior Electrical Engineer, U. S. B. M.).

Serial No. 2450—Petroleum Engineering in the Skull Creek Oil Pool Northeastern Osage County, Oklahoma. By T. E. Swigart (Superintendent, Petroleum Experiment Station, B. M.).

Serial No. 2451—Coal Mine Fatalities in January, 1923. By W. W. Adams (Statistician, B. M.).

U. S. Dept. of Commerce. Scientific Papers of the Bureau of Standards:

No. 453—Preparation and Properties of Pure Iron Alloys. By Robert P. Neville (Associate Chemist and John R. Cain, Research Associate, B. S.).

No. 457—Gases in Metals. 1. The Determination of Combined Nitrogen in Iron and Steel and the Change in Form of Nitrogen by Heat Treatment. By Louis Jordan (Chemist and F. E. Swindell, Assistant Chemist, B. S.).

Scientific Papers of the Bureau of Standards—Vol. 17, 1922.

State of Illinois Department of Registration and Education, Division of the State Geological Survey, Bulletin No. 38—Administrative Report and Economic and Geological Papers.

Extract from Bulletin 43—Geology and Mineral Resources of the Norris Quadrangle. By Harold E. Culver.

State of California Fish and Game Commission 27th Biennial Report, 1920-1922.

Imperial Geological Survey of Japan Reports 85-86-87. Explanatory Text of the Geological Map of Japan.

The Geology of the Yajima Oil Field.

Industrial Mineral Survey Reports Nos. 9-10-11-12.

Societies and Educational Institutions.

The American Mineralogist, January, 1923, and February, 1923.

Alumni Magazine of the Colorado School of Mines, February, 1923.

Monthly Bulletin of the Canadian Institute of Mining and Metallurgy, March, 1923.

The Mining Congress Journal, March, 1923.

Journal of the Western Society of Engineers, Vol. XXVIII—No. 3.

Bulletin of the Institution of Mining and Metallurgy, February, 1923.

Journal of the College of Science of Imperial University of Tokyo, January 24, 1923.

The Philippine Journal of Science, January, 1923.

Annual Report of the Academy of Natural Sciences of Philadelphia.

Proceedings of the Academy of Natural Sciences of Philadelphia—Vol. LXXIV.

Books.

World Almanac for 1923.

The Petroleum Register for 1923.

Current Magazines on File.

For the convenience of persons wishing to consult the technical magazines in the reading room, a list of those on file is appended:

Architect and Engineer, San Francisco.
Arizona Mining Journal, Phoenix, Arizona.
Asbestos, Philadelphia, Pennslyvania.
American Petroleum Institute, New York.
Brick and Clay Record, Chicago.
Chemical Engineering and Mining Review, London, England.
Cement, Mill and Quarry, Chicago, Illinois.
Engineering and Mining Journal-Press, New York.
Financial Insurance News, Los Angeles, California.
Hercules Mixer, Washington, Delaware.
Journal of Electricity and Western Industry, San Francisco.
Metallurgical and Chemical Engineering, New York.
Mining and Oil Bulletin, Los Angeles.
Mining and Engineering Record, Vancouver, B. C.

Oildom, New York.
Oil Weekly, Houston, Texas.
Oil and Gas Journal, Tulsa, Oklahoma.
Oil, Paint and Drug Reporter, New York.
Oil Trade Journal, New York.
Oil Weekly, Houston, Texas.
Petroleum Age, New York.
Petroleum Record, Los Angeles.
Petroleum Refiner, Kansas City, Missouri.
Petroleum World, Los Angeles.
Queensland Government Mining Journal, Brisbane, Australia.
Rock Products, Chicago, Illinois.
Safety News, Industrial Accident Commission, San Francisco.
Salt Lake Mining Review, Salt Lake City, Utah.
Southwest Builder and Contractor, Los Angeles.
Standard Oil Bulletin, San Francisco.
Stone, New York.
The Record, Associated Oil Company, San Francisco.

Newspapers.

The following papers are received and kept on file in the library

Amador Dispatch, Jackson, Cal.
Arkansas Oil and Mineral News, Hot Springs National Park (Arkansas).
Bakersfield Morning Echo, Bakersfield, Cal.
Blythe Herald, Blythe, Cal.
Bridgeport-Chronicle-Union, Bridgeport, Mono Co., Cal.
California Oil World, Los Angeles, Cal.
Colusa Daily Sun, Colusa, Cal.
Daily Midway Driller, Taft, Cal.
Del Norte Triplicate, Crescent City, Cal.
Exeter Sun, Exeter, Cal.
Gateway Gazette, Beaumont, Cal.
Georgetown Gazetee, Georgetown, Cal.
Gilroy Gazette, Gilroy, Cal.
Goldfield News, Goldfield, Nevada.
Guerneville Times, Guerneville, Cal.
Healdsburg Enterprise, Healdsburg, Cal.
Humboldt Standard, Eureka, Cal.
Inyo Independent, Independence, Cal.
Inyo Register, Bishop, Cal.
Lake County Bee, Lakeport, Cal.
Mariposa Gazette, Mariposa, Cal.
Mining and Financial Record, Denver, Colo.
Mountain Democrat, Placerville, Cal.
Mountain Messenger, Downieville, Cal.
Nevada Mining Press, Reno, Nevada.
Oatman Mining Press, Oatman, Arizona.
Oregon Observer, Grants Pass, Oregon.
Oroville Daily Register, Oroville, Cal.
Petroleum Reporter, Etna Mills, Cal.
Placer Herald, Auburn, Cal.
Plumas Independent, Quincy, Cal.
Plumas National Bulletin, Quincy, Cal.
Sacramento Union, Sacramento, Cal.
San Diego News, San Diego, Cal.
Santa Barbara Daily News, Santa Barbara, Cal
Shasta Courier, Redding, Cal.
Siskiyou News, Yreka, Cal.
Siskiyou Standard, Fort Jones, Cal.
Stockton Record, Stockton, Cal.
Sunset Journal, Sunset District, San Francisco, Cal
Tuolumne Prospector, Tuolumne, Cal.
Ventura Daily Post, Ventura, Cal.
Weekly Trinity Journal, Weaverville, Cal.
Western Sentinel, Etna Mills, Cal.

PRODUCERS AND CONSUMERS.

The producer and consumer of mineral products are mutually dependent upon each other for their prosperity, and one of the most direct aids rendered by the Bureau to the mining industry in the past has been that of bringing producers and consumers into direct touch with each other.

This work has been carried on largely by correspondence, supplemented by personal consultation. Lists of consumers of all the commercial minerals produced in California have been made available to producers upon request, and likewise the owners of undeveloped deposits of various minerals, and producers of them have been made known to those looking for raw mineral products.

Sufficient publicity has not heretofore been given to this feature of the Bureau's work, but in 'Mining in California' a suitable medium is provided for current inquiries of this nature, and, therefore, written or verbal inquiries that come to the attention of the Bureau are summarized in each issue.

The name of the product wanted or offered, only, is published; the name of the owner of the deposit, or buyer, and other details being supplied upon request.

In writing, the reference number of the item should be given.

Mineral Products or Deposits for Sale.

12–24 Raw magnesite.
12–25 Shale oil for flotation purposes.
12–26 Barite; large deposit 1½ miles from railroad.
12–27 Diatomaceous earth.
12–28 Quartz crystals.
12–29 Sericite-schist.
12–30 Graphite.
12–31 Copper-gold-silver claims; Inyo County.
12–32 Quicksilver claims; undeveloped; 80 acres.
12–33 Gold quartz prospect; ½ mile east of Kennedy mine; 90-ft. shaft. Liberal lease and option.
12–34 Red marble deposit; on good road eight miles from railroad.
12–35 White clay and white clay-sand; short haul to railroad.
12–36 Yellow ochre deposit; large; three mile haul over good road to railroad.
12–37 Mineral paint; red; tonnage or deposit.
12–38 Placer property; 365 acres; Plumas County.
12–39 Copper deposit; large; 15 miles from Mt. Shasta. 2 to 35% copper, some silver and gold.

Mineral Products or Deposits Wanted.

13–23 Clay, with high alumina content.
13–24 Arsenic ore, capable of hand-sorting to 25% metallic arsenic.
13–25 Arsenopyrite or any arsenical ore; deposit.
13–26 Non-metallic industrial minerals.
13–27 Natural tourmaline crystals.
13–28 Magnesite; deposit.
13–29 Chrysotile asbestos; deposit.
13–30 Gold quartz property; developed, or undeveloped if existence of commercial ore can be shown. Nothing south of Tuolumne County considered.
13–31 Barite; deposit or tonnage. Must not contain strontium.
13–32 Red jasper and a hard yellow rock for roofing and stucco 'dash'; tonnage.
13–33 Gold placer property that is for lease or sale on easy terms.
13–34 Obsidian or volcanic glass; tonnage.
13–35 Magnesite; tonnage.
13–36 Mineral spring, within fifty miles of Los Angeles, that is not in use.

EMPLOYMENT SERVICE.

Following the establishment of the Mining Division branch offices in 1919, a free technical employment service was offered as a mutual aid to mine operators and technical men for the general benefit of the mineral industry.

Briefly summarized, men desiring positions are registered, the cards containing an outline of the applicant's qualifications, position wanted, salary desired, etc., and as notices of 'positions open' are received, the names and addresses of all applicants deemed qualified are sent to the prospective employer for direct negotiations.

Telephone and telegraphic communications are also given immediate attention.

The Bureau registers technical men, or those qualified for supervisory positions, and vacancies of like nature, only, as no attempt will be made to supply common mine and mill labor.

A list of applicants for positions and 'positions open,' received by the Bureau during each 30-day period preceding the date of publication of the Monthly Chapter is carried in each issue.

Each notice is designated by a key number, and communications sent to the Bureau in reply to any notice will be forwarded to the proper party without delay or charge of any kind. If desired, recommendations may be filed with an application, but copies only should be sent to the Bureau, to avoid possible loss.

Registration cards for the use of both prospective employers and employees may be obtained at any office of the Bureau upon request, and a cordial invitation is extended to the industry to make free use of the facilities afforded.

POSITIONS WANTED.

11–8 Superintendent or Foreman Hydraulic Mine. Thirty years experience as owner, manager or superintendent. Age 55. References. Salary wanted $200.

PUBLICATIONS OF THE CALIFORNIA STATE MINING BUREAU.

During the past forty-two years, in carrying out the provisions of the organic act creating the California State Mining Bureau, there have been published many reports, bulletins and maps which go to make up a library of detailed information on the mineral industry of the state, a large part of which could not be duplicated from any other source.

One feature that has added to the popularity of the publications is that many of them have been distributed without cost to the public, and even the more elaborate ones have been sold at a price which barely covers the cost of printing.

Owing to the fact that funds for the advancing of the work of this department have often been limited, many of the reports and bulletins mentioned were printed in limited editions which are now entirely exhausted.

Copies of such publications are available, however, in the Bureau's offices in the Ferry Building, San Francisco; Pacific Finance Building, Los Angeles; in Santa Maria; Santa Paula; Coalinga; Taft; Bakersfield; Auburn, and Redding. They may also be found in many public, private and technical libraries in California and other states, and foreign countries.

A catalog of all publications of the Bureau, from 1880 to 1917, giving a synopsis of their contents, is issued as Bulletin No. 77.

Publications in stock may be obtained by addressing any of the offices of the State Mining Bureau and enclosing the requisite amount in the case of publications that have a list price. The Bureau is authorized to receive only coin, stamps or money orders, and it will be appreciated if remittance is made in this manner rather than by personal check.

The prices noted include delivery charges to all parts of the United States. Money orders should be made payable to the State Mining Bureau.

REPORTS.

Asterisks (**) indicate the publication is out of print.

	Price
**First Annual Report of the State Mineralogist, 1880, 43 pp. Henry G. Hanks	----
**Second Annual Report of the State Mineralogist, 1882, 514 pp., 4 illustrations, 1 map. Henry G. Hanks	----
**Third Annual Report of the State Mineralogist, 1883, 111 pp., 21 illustrations. Henry G. Hanks	----
**Fourth Annual Report of the State Mineralogist, 1884, 410 pp., 7 illustrations. Henry G. Hanks	----
**Fifth Annual Report of the State Mineralogist, 1885, 234 pp., 15 illustrations, 1 geological map. Henry G. Hanks	----
**Sixth Annual Report of the State Mineralogist, Part I, 1886, 145 pp., 3 illustrations, 1 map. By Henry G. Hanks	----
**Part II, 1887, 222 pp., 36 illustrations. William Irelan, Jr.	----
**Seventh Annual Report of the State Mineralogist, 1887, 315 pp. William Irelan, Jr.	----
**Eighth Annual Report of the State Mineralogist, 1888, 948 pp., 122 illustrations. William Irelan, Jr.	----
**Ninth Annual Report of the State Mineralogist, 1889, 352 pp., 57 illustrations, 2 maps. William Irelan, Jr.	----
**Tenth Annual Report of the State Mineralogist, 1890, 983 pp., 179 illustrations, 10 maps. William Irelan, Jr.	----
Eleventh Report (First Biennial) of the State Mineralogist, for the two years ending September 15, 1892, 612 pp., 73 illustrations, 4 maps. William Irelan, Jr.	$1.00
**Twelfth Report (Second Biennial) of the State Mineralogist, for the two years ending September 15, 1894, 541 pp., 101 illustrations, 5 maps. J. J. Crawford	----
**Thirteenth Report (Third Biennial) of the State Mineralogist, for the two years ending September 15, 1896, 726 pp., 93 illustrations, 1 map. J. J. Crawford	----
Chapters of the State Mineralogist's Report, Biennial Period, 1913-1914, Fletcher Hamilton:	
**Mines and Mineral Resources, Amador, Calaveras and Tuolumne Counties, 172 pp., paper	----
Mines and Mineral Resources, Colusa, Glenn, Lake, Marin, Napa, Solano, Sonoma and Yolo Counties, 208 pp., paper	.50
Mines and Mineral Resources, Del Norte, Humboldt, and Mendocino Counties, 59 pp., paper	.25
Mines and Mineral Resources, Fresno, Kern, Kings, Madera, Mariposa, Merced, San Joaquin and Stanislaus Counties, 220 pp., paper	.50
Mines and Mineral Resources of Imperial and San Diego Counties, 113 pp., paper	.35
**Mines and Mineral Resources, Shasta, Siskiyou and Trinity Counties, 180 pp., paper	----
Fourteenth Report of the State Mineralogist, for the Biennial Period 1913-1914, Fletcher Hamilton, 1915:	
A General Report on the Mines and Mineral Resources of Amador, Calaveras, Tuolumne, Colusa, Glenn, Lake, Marin, Napa, Solano, Sonoma, Yolo, Del Norte, Humboldt, Mendocino, Fresno, Kern, Kings, Madera, Mariposa, Merced, San Joaquin, Stanislaus, San Diego, Imperial, Shasta, Siskiyou, and Trinity Counties, 974 pp., 275 illustrations, cloth	$2.00
Chapters of the State Mineralogist's Report, Biennial Period, 1915-1916, Fletcher Hamilton:	
Mines and Mineral Resources, Alpine, Inyo and Mono Counties, 176 pp., paper	.65
Same, including geological map of Inyo County	1.25
Mines and Mineral Resources, Butte, Lassen, Modoc, Sutter, and Tehama Counties, 91 pp., paper	.50
Mines and Mineral Resources, El Dorado, Placer, Sacramento, and Yuba Counties, 198 pp., paper	.65

REPORTS—Continued.

Asterisks (**) indicate the publication is out of print.

	Price
Mines and Mineral Resources, Los Angeles, Orange, and Riverside Counties, 136 pp., paper	$0.50
Mines and Mineral Resources, Monterey, San Benito, San Luis Obispo, Santa Barbara, and Ventura Counties, 183 pp., paper	.65
Mines and Mineral Resources, San Bernardino and Tulare Counties, 186 pp., paper	.65
Fifteenth Report of the State Mineralogist, for the Biennial Period 1915-1916, Fletcher Hamilton, 1917:	
A general Report on the Mines and Mineral Resources of Alpine, Inyo, Mono, Butte, Lassen, Modoc, Sutter, Tehama, Placer, Sacramento, Yuba, Los Angeles, Orange, Riverside, San Benito, San Luis Obispo, Santa Barbara, Ventura, San Bernardino and Tulare Counties, 990 pp., 413 illustrations, cloth	3.75
Chapters of the State Mineralogist's Report, Biennial Period 1917-1918, Fletcher Hamilton:	
Mines and Mineral Resources of Nevada County, 270 pp., paper	.75
Mines and Mineral Resources of Plumas County, 188 pp., paper	.50
Mines and Mineral Resources of Sierra County, 144 pp., paper	.50
Seventeenth Report of the State Mineralogist, 1920, Mining in California During 1920, Fletcher Hamilton; 562 pp., 71 illustrations, cloth	1.75
Eighteenth Report of the State Mineralogist, 1922, Mining in California, Fletcher Hamilton. Chapters published monthly beginning with January, 1922:	
**January, **February, March, April, May, June, July, August, September, October, November, December, 1922	Free
Chapters of State Oil and Gas Supervisor's Report:	
Summary of Operations—California Oil Fields, July, 1918, to March, 1919 (one volume)	Free
Summary of Operations—California Oil Fields. Published monthly, beginning April, 1919:	
**April, **May, June, **July, **August, **September, **October, November, December, 1919	Free
January, February, March, April, May, June, July, **August, September, October, November, December, 1920	Free
January, February, March, April, May, June, **July, August, **September, **October, **November, December, 1921	Free
January, February, March, April, May, June, July, August, September, October, November, December, 1922	Free

BULLETINS.

	Price
**Bulletin No. 1. A Description of Some Desiccated Human Remains, by Winslow Anderson. 1888, 41 pp., 6 illustrations	----
**Bulletin No. 2. Methods of Mine Timbering, by W. H. Storms. 1894, 58 pp., 75 illustrations	----
**Bulletin No. 3. Gas and Petroleum Yielding Formations of Central Valley of California, by W. L. Watts. 1894, 100 pp., 13 illustrations, 4 maps	----
**Bulletin No. 4. Catalogue of Californian Fossils, by J. G. Cooper, 1894, 73 pp., 67 illustrations. (Part I was published in the Seventh Annual Report of the State Mineralogist, 1887.)	----
**Bulletin No. 5. The Cyanide Process, 1894, by Dr. A. Scheidel. 140 pp., 46 illustrations	----
Bulletin No. 6. California Gold Mill Practices, 1895, by E. B. Preston, 85 pp., 46 illustrations	.50
**Bulletin No. 7. Mineral Production of California, by Counties for the year 1894, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 8. Mineral Production of California, by Counties for the year 1895, by Charles G. Yale. Tabulated sheet	----
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	Price
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**Bulletin No. 11. Oil and Gas Yielding Formations of Los Angeles, Ventura and Santa Barbara counties, by W. L. Watts. 1897, 94 pp., 6 maps, 31 illustrations	----
**Bulletin No. 12. Mineral Production of California, by Counties for 1896, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 13. Mineral Production of California, by Counties for 1897, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 14. Mineral Production of California, by Counties for 1898, by Charles G. Yale	----
**Bulletin No. 15. Map of Oil City Fields, Fresno County, by John H. Means. 1899.	----
**Bulletin No. 16. The Genesis of Petroleum and Asphaltum in California, by A. S. Cooper. 1899, 39 pp., 29 illustrations	----
**Bulletin No. 17. Mineral Production of California, by Counties for 1899, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 18. Mother Lode Region of California, by W. H. Storms. 1900, 154 pp., 49 illustrations	----
**Bulletin No. 19. Oil and Gas Yielding Formations of California, by W. L. Watts. 1900, 236 pp., 60 illustrations, 8 maps	----
**Bulletin No. 20. Synopsis of General Report of State Mining Bureau, by W. L. Watts. 1901, 21 pp. This bulletin contains a brief statement of the progress of the mineral industry in California for the four years ending December, 1899	----
**Bulletin No. 21. Mineral Production of California by Counties, by Charles G. Yale. 1900. Tabulated sheet	----
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**Bulletin No. 41. Mines and Minerals of California, for 1904, by Charles G. Yale. 1905, 54 pp., 20 county maps	----
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Bulletin No. 74. Mineral Production of California in 1916, with County Maps, by Walter W. Bradley. 179 pp., 12 illustrations	Free
**Bulletin No. 75. United States and California Mining Laws. 1917. 115 pp., paper	----
Bulletin No. 76. Manganese and Chromium in California, by Walter W. Bradley, Emile Huguemn, C. A. Logan, W. B. Tucker and C. A. Waring, 1918. 248 pp., 51 illustrations, 5 maps, paper	.50
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**Preliminary Report No. 2. Notes on Damage by Water in California Oil Fields, March, 1914. By R. P. McLaughlin. 4 pp.	----
**Preliminary Report No. 3. Manganese and Chromium, 1917. By E. S. Boalich. 32 pp.	----
Preliminary Report No. 4. Tungsten, Molybdenum and Vanadium. By E. S. Boalich and W. O. Castello, 1918. 34 pp. Paper	Free
Preliminary Report No. 5. Antimony, Graphite, Nickel, Potash, Strontium and Tin. By E. S. Boalich and W. O. Castello, 1918. 44 pp. Paper	Free
Preliminary Report No. 6. A Review of Mining in California During 1919. Fletcher Hamilton, 1920. 43 pp. Paper	Free
**Preliminary Report No. 7. The Clay Industry in California. By E. S. Boalich, W. O. Castello, E. Huguenin, C. A. Logan, and W. B. Tucker, 1920. 102 pp. 24 illustrations. Paper	----
**Preliminary Report No. 8. A Review of Mining in California During 1921, with Notes on the Outlook for 1922. Fletcher Hamilton, 1922. 68 pp. Paper	----

MISCELLANEOUS PUBLICATIONS.

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**First Annual Catalogue of the State Museum of California, being the collection made by the State Mining Bureau during the year ending April 16, 1881. 350 pp.	
**Catalogue of books, maps, lithographs, photographs, etc., in the library of the State Mining Bureau at San Francisco, May 15, 1884. 19 pp	----
**Catalogue of the State Museum of California, Volume II, being the collection made by the State Mining Bureau from April 16, 1881, to May 5, 1884. 220 pp.	----
**Catalogue of the State Museum of California, Volume III, being the collection made by the State Mining Bureau from May 15, 1884, to March 31, 1887. 195 pp,	----
**Catalogue of the State Museum of California, Volume IV, being the collection made by the State Mining Bureau from March 30, 1887, to August 20, 1890. 261 pp.	----
**Catalogue of the Library of the California State Mining Bureau, September 1, 1892. 149 pp.	----
**Catalogue of West North American and many Foreign Shells with Their Geographical Ranges, by J. G. Cooper. Printed for the State Mining Bureau, April, 1894	----
**Report of the Board of Trustees for the four years ending September, 1900. 15 pp. Paper	----
Bulletin. Reconnaissance of the Colorado Desert Mining District. By Stephen Bowers, 1901. 19 pp. 2 illustrations. Paper	Free

MAPS.

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**Register of Mines, with Map, El Dorado County	
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**Register of Mines, with Map, Nevada County	
**Register of Mines, with Map, Placer County	
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Register of Mines, with Map, Yuba County	.25
Register of Oil Wells, with Map, Los Angeles City	

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Map of Forest Reserves in California—	
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**Mineral and Relief Map of California	
**Map of El Dorado County, Showing Boundaries, National Forests	
**Map of Madera County, Showing Boundaries, National Forests	
**Map of Placer County, Showing Boundaries, National Forests	
**Map of Shasta County, Showing Boundaries, National Forests	
**Map of Sierra County, Showing Boundaries, National Forests	
**Map of Siskiyou County, Showing Boundaries, National Forests	
**Map of Tuolumne County, Showing Boundaries, National Forests	
**Map of Mother Lode Region	
**Map of Desert Region of Southern California	
Map of Minaret District, Madera County	.20
Map of Copper Deposits in California	.05
**Map of Calaveras County	
Map of Plumas County	.25
**Map of Trinity County	
Map of Tuolumne County	.25
Geological Map of Inyo County. Scale 1 inch equals 4 miles	.60
Map of California accompanying Bulletin No. 89, showing generalized classification of land with regard to oil possibilities. Map only, without Bulletin	.25
Geological Map of California, 1916. Scale 1 inch equals 12 miles. As accurate and up-to-date as available data will permit as regards topography and geography. Shows railroads, highways, post offices and other towns. First geological map that has been available since 1892, and shows geology of entire state as no other map does. Geological details lithographed in 23 colors. Mounted	2.50

OIL FIELD MAPS.

These maps are revised from time to time as development work advances and ownerships change.

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Map No. 5—Whittier-Fullerton, including Whittier, West Coyote, and Montebello	.75
Map No. 6—Salt Lake, Los Angeles County	.75
Map No. 7—Sunset and San Emido and Kern County	.75
Map No. 8—South Midway and Buena Vista Hills, Kern County	.75
Map No. 9—North Midway and McKittrick, Kern County	.75
Map No. 10—Belridge and McKittrick, Kern County	.75
Map No. 11—Lost Hills and North Belridge, Kern County	.75
Map No. 12—Devils Den, Kern County	.75
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Map No. 15—Elk Hills, Kern County	.75
Map No. 16—Ventura-Ojai, Ventura County	.75
Map No. 17—Santa Paula-Sespe Oil Fields, Ventura County	.75
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Map No. 24—Portion of District 1, Showing Boundaries of Oil Fields, Los Angeles and Orange counties	.75
Map No. 25—Kern River Oil Field	.75
Map No. 26—Huntington Beach Oil Field	.75
Map No. 27—Santa Fe Springs	.75

DETERMINATION OF MINERAL SAMPLES.

Samples (limited to three at one time) of any mineral found in the State may be sent to the Bureau for identification, and the same will be classified free of charge. No samples will be determined if received from points outside the State. It must be understood that no assays, or quantitative determinations will be made. Samples should be in lump form if possible, and marked plainly with name of sender on outside of package, etc. No samples will be received unless delivery charges are prepaid. A letter should accompany sample, giving locality where mineral was found and the nature of the information desired.

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THE STATE MINING BUREAU

CORDIALLY INVITES YOU TO VISIT ITS VARIOUS DEPARTMENTS MAINTAINED FOR THE PURPOSE OF FURTHERING THE DEVELOPMENT OF THE

MINERAL RESOURCES OF CALIFORNIA

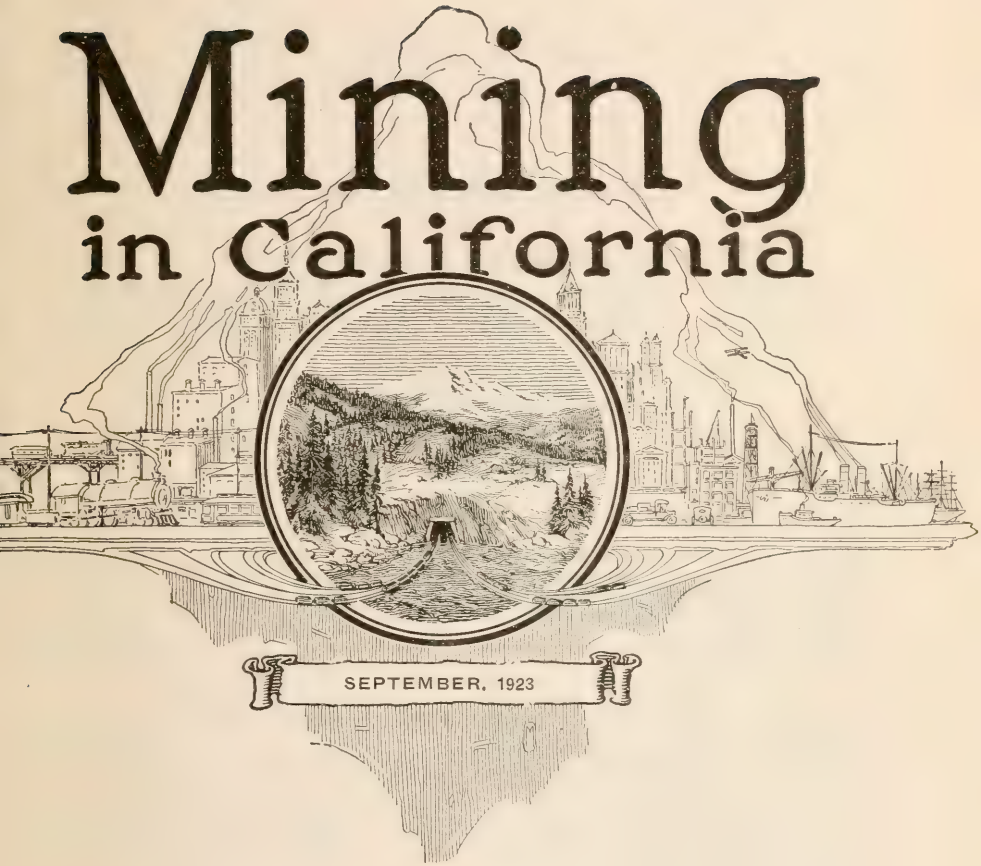
At the service of the public are the scientific reference library and reading room, the general information bureau, the laboratory for the free determination of mineral samples found in the state, and the largest museum of mineral specimens on the Pacific Coast. The time and attention of the state mineralogist, as well as that of his technical staff, is also at your disposal.

Office hours: 9 a.m. to 5 p.m. daily.
Saturday, 9 a.m. to 12 m.

LLOYD L. ROOT,
State Mineralogist.

Third floor, Ferry Building, San Francisco, Cal.
Branch Offices: Pacific Finance Building, Los Angeles; Bakersfield, Taft, Coalinga, Santa Maria, Santa Paula, Redding, and Auburn.

Mining in California



SEPTEMBER, 1923

PUBLISHED QUARTERLY

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FERRY BUILDING
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CALIFORNIA STATE MINING BUREAU.

EXECUTIVE AND TECHNICAL STAFF

LLOYD L. ROOT
State Mineralogist

WALTER W. BRADLEY
Deputy State Mineralogist

MINING DIVISION

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R. E. Collom, State Oil and Gas Supervisor - - - - - -	San Francisco

Note.—A detailed report of the activities of the Department of Petroleum and Gas is issued monthly by the State Mining Bureau, entitled 'Summary of Operations, California Oil Fields.'

CALIFORNIA STATE MINING BUREAU
FERRY BUILDING, SAN FRANCISCO

LLOYD L. ROOT State Mineralogist

Vol. 19 SEPTEMBER, 1923 No. 4

CHAPTER OF

REPORT XIX OF THE STATE MINERALOGIST

COVERING

MINING IN CALIFORNIA

AND THE

ACTIVITIES OF THE STATE MINING BUREAU

CALIFORNIA STATE PRINTING OFFICE
FRANK J. SMITH, Superintendent
SACRAMENTO, 1923

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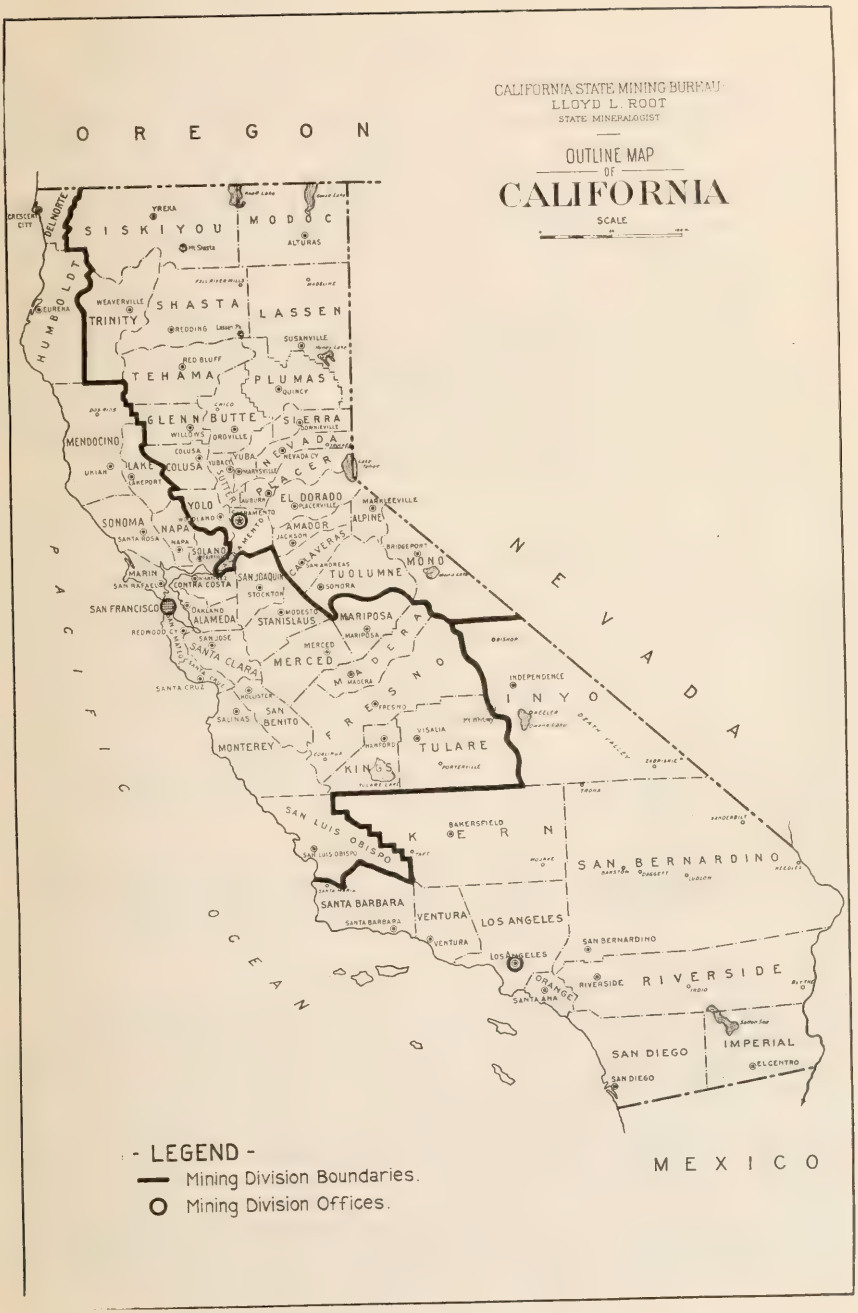
CALIFORNIA STATE MINING BUREAU
LLOYD L. ROOT
STATE MINERALOGIST
OUTLINE MAP
OF
CALIFORNIA
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SISKIYOU
MODOC
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TEHAMA
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BUTTE
SIERRA
MENDOCINO
COLUSA
YUBA
NEVADA
PLACER
LAKE
YOLO
EL DORADO
SONOMA
NAPA
SOLANO
AMADOR
ALPINE
MARIN
CONTRA COSTA
SAN JOAQUIN
TUOLUMNE
MONO
SAN FRANCISCO
ALAMEDA
STANISLAUS
MARIPOSA
SANTA CLARA
MERCED
INYO
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MONTEREY
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KERN
SAN LUIS OBISPO
SAN BERNARDINO
SANTA BARBARA
VENTURA
LOS ANGELES
RIVERSIDE
ORANGE
SAN DIEGO
IMPERIAL
- LEGEND -
Mining Division Boundaries.
Mining Division Offices.

PREFACE.

The State Mining Bureau is maintained for the purpose of assisting in all possible ways in the development of California's mineral resources.

As one means of offering tangible service to the mining public, the State Mineralogist for many years has issued an annual or a biennial report reviewing in detail the mines and mineral deposits of the various counties.

The weak point in work of this character has been that the results of field investigations were so long in preparation that they had lost much of their usefulness by the time they finally appeared in print.

As a progressive step in advancing the interests of the mineral industry, publication of the Annual Report of the State Mineralogist in the form of monthly chapters was begun in January, 1922, and continued until March, 1923.

Owing to a lack of funds for printing, quarterly publication was begun in September, 1923.

Such a publication admits of several improvements over the old method of procedure. Each issue contains a report of the current development and mining activities of the state, prepared by the district mining engineers. Special articles dealing with various phases of mining and allied subjects by members of the staff and other contributors are included. Mineral production reports formerly issued only as an annual statistical bulletin are published herein as soon as returns from producers are compiled. The executive activities, and those of the laboratory, museum, library, employment service and other features with which the public has had too little acquaintance also are reported.

While current activities of all descriptions will be covered in these chapters, the Bureau will not discontinue its practice of issuing from time to time technical reports on special subjects. A list of such reports now available is appended hereto, and the names of new bulletins will be added in the future as they are completed.

The chapters will be subject to revision, correction and improvement. Constructive suggestions from the mining public will be gladly received, and are invited.

The one aim of the Mining Bureau is to increase its usefulness and to stimulate the intelligent development of the wonderful, latent resources of the State of California.

'Mining in California' is sent without charge to those on the Bureau's exchange list and to others who make written or verbal request.

Pages are numbered consecutively throughout the year and an index to the complete reports is included annually in the closing number.

DISTRICT REPORTS OF MINING ENGINEERS.

In 1919–1920 the Mining Department was organized into four main geographical divisions, with the field work delegated to a mining engineer in each district working out from field offices that were established in Redding, Auburn, San Francisco and Los Angeles, respectively.

This move brought the Bureau into closer personal contact with operators, and it has many advantages over former methods of conducting field work.

To continue this system most effectively with the limited funds available for the next biennium, the Redding and Auburn field offices were consolidated and moved to Sacramento on June 1, 1923.

The boundaries of each district were adjusted and the counties now included in each of the three divisions, and the locations of the branch offices, are shown on the accompanying outline map of the state. (Frontispiece.)

Reports of mining activities and development in each division, prepared by the district engineer, will continue to appear under the proper field division heading.

Although the petroleum industry is but little affiliated with other branches of mining, oil and gas are among the most valuable mineral products of California, and a report by the State Oil and Gas Supervisor on the current development and general conditions in the state's oil fields is included under this heading.

REDDING FIELD DIVISION.

W. Burling Tucker, Mining Engineer.

Lassen County.

Corona Copper Mine. The property is situated near Milford, in T. 27 N., R. 14 E., southwest of Honey Lake, near the Lassen and Plumas County line.

The mine is being developed by Marr and Fex of Milford, and it is reported that a large body of copper ore has been exposed that runs from 2 to 15 per cent copper.

Shasta County.

American Mine, situated in Secs. 12 and 13, T. 33 N., R. 7 W., on the ridge north of Cline Gulch, 3½ miles northeast of French Gulch. Elevation, 2800 feet. Owner, W. Frank, of French Gulch. Holdings consist of the following claims: American, Wheeler and Summit, totaling 100 acres of which 60 acres are patented. The property has recently been examined by engineers representing Comstock, Nevada, interests. It is reported that a bond has been taken on the property, and that active plans of development will be started in the near future, under the supervision of Harry M. Thompson, of French Gulch. Several men are employed in repairing the road to the workings which are located on the ridge north of Cline Gulch, between Clear Creek and J. I. C.

Gulch. The workings consist of tunnels at several elevations between 2500 feet and 3500 feet.

Bibliography: State Mineralogist's Reports VIII, pp. 564–565; X, p. 637; XII, p. 245; XIII, p. 349. U. S. Geological Survey Bull. No. 540, pp. 35, 60–61.

Lewis Gardella of Oroville, dredge operator, has purchased from the American Gold Dredging Company 310 acres of land on Clear Creek.

Highland Mine. The *Iron Mountain Investment Company,* a subsidiary to the *Mountain Copper Company,* has received a patent for the Highland Lode mining claim, in Sec. 35, T. 33 N., R. 6 W., in the Flat Creek Mining District.

The Mount Shasta Silica Company, of Weed, Siskiyou County, has purchased forty-six placer claims, known as the Insulator Group. These claims are located on a large deposit of diatomaceous earth in the northeastern part of Shasta County, near Bartle Station, on the Pacific Gas and Electric Company's railroad to Pit No. 1 power plant.

Silver Falls and Chicago Consolidated Mines, are situated four miles northeast of Igo, in the South Fork Mining District, in Secs. 17, 18, 19 and 20, T. 31 N., R. 6 W., at an elevation of 1400 feet. The property is under option to the *California Bi-Metallic Corporation,* L. G. Vinson, president; Paul Drinkwitz, secretary; Louis F. Eaton, general manager. Office, 21 Carrillo Building, Santa Barbara, California.

A detailed description of this property is to be found in the July chapter of Report XVIII of the State Mineralogist, pp. 316–317.

Active development operations were started by this company the latter part of October, 1922. Since that date, a total of 1400 feet of development work has been done, including raises, crosscuts and drifts.

Mine development: At 500 feet from the portal of the main tunnel level, drifts have been driven on the Pillchuck vein for a distance of 271 feet northeast, and to the southwest a distance of 50 feet. In the drift to the southwest the face shows 3 feet of mineralized quartz. It is stated that samples taken from the vein have an assay value of $25 per ton, in gold and silver. At the intersection of crosscut No. 36 and the drift on No. 28 vein, a raise has been put up on No. 28 vein for a distance of 155 feet, and then on an incline of 50 degrees west, and it has less than 250 feet to go on the incline to reach the surface. The vein as developed by this raise has a width of 6 inches to ten inches of mineralized quartz.

The drift on No. 28 vein has been extended 250 feet northeast. At about 380 feet from the raise a rich shoot of ore was encountered, showing from 8 inches to 2 feet of quartz. Samples taken from this shoot are said to average $100 per ton, with $15 in gold. The main crosscut tunnel was extended 190 feet to vein No. 36. A crosscut was driven south from No. 27 drift 30 feet to vein No. 26, then drifted northeast on this vein 120 feet.

Surface development: In the Buckley tunnel, which is on the main Chicago-Madison lode, the drift on the vein has been extended 40 feet, making a total distance on the vein of 120 feet. The shoot of ore

developed on this vein is from 80 to 100 feet in length, 12 inches to 2 feet in width, and assays from it are reported to have a value of $65 in gold and silver per ton. About 340 feet northeast of No. 2 Wright shaft, at an elevation of 2000 feet, a tunnel is being driven north to cut the shoot of ore developed in the Buckley tunnel. This tunnel is in 80 feet, and will give about 250 feet of backs. At the collar of No. 2 Wright shaft a crosscut tunnel is being driven north to cut the main Chicago vein. The tunnel is now in 130 feet. At about 50 feet from the portal the tunnel cut two veins, which have widths of 12 inches to 18 inches, assaying $25 to $30 per ton in gold and silver. In the ore developed in the Buckley, and the tunnel from the Wright No. 2 shaft, the principal values are in gold, some assays showing as high as $65 in gold with $16 in silver.

Equipment consists of Type W. G. 6, 12″ x 12″ Sullivan compressor, capacity 365 cu. ft., driven by 50-horsepower Holt gas engine; high pressure blower, 12-inch outlet driven by 10-horsepower gas engine; Sullivan drill sharpener, 6 Sullivan air drills and 12 ore cars. Buildings comprise assay office, compressor house, blacksmith shop, two bunk houses, office and superintendent's residence. Twenty-five men are employed.

Bibliography: State Mineralogist's Report XVIII, pp. 313–317.

The *Sybil Mine*, which is located in Sec. 7, T. 33 N., R. 7 W., 5 miles northwest of French Gulch, recently suspended operations. The property is owned by the *Shasta Mining Company* of San Francisco, and has been under active operation for the past two years by Harry M. Thompson and associates of San Francisco, California.

The main working tunnel is driven southeast 700 feet at an elevation of 3700 feet. A winze was sunk from this level to a depth of 150 feet. At 80 feet below the tunnel a drift is driven 175 feet east, and 175 feet west on the vein.

Equipment consists of 12″ x 12″ Laidlaw-Dunn Gordan compressor, driven by 50-horsepower motor; 5-stamp mill, 1000 lb. stamps, and Frue vanner.

Bibliography: State Mineralogist's Report XIV, p. 777. U. S. Geological Survey Bull. No. 540, pp. 68–69.

Texas Consolidated Mine, which is situated in the Old Diggins Mining District, 9 miles north of Redding, is under lease and bond to Harvey Sallee of Old Diggins. The main working tunnel, known as No. 5 tunnel, is driven N. 10° E., 1600 feet and is 910 feet below the surface outcrop. The vein strikes N. 10° E. and dips 70° to the east, and where worked is reported to have been from 8 to 12 feet in width. The vein is faulted by a series of N. 40° W. faults, which cut off the ore. The present development work is confined to driving two crosscuts on No. 5 level, one to the east and the other to the west, located beyond the winze sunk from this level, with the idea of picking up the ore shoot that was cut off by one of these N. 40° W. faults.

Four men are employed on development work.

Bibliography: State Mineralogist's Reports, X, pp. 629, 630; XI, pp. 43, 395–397; XII, p. 258; XIII, p. 365; XIV, p. 800.

Siskiyou County.

Asbestos Group of Mines, owned by M. A. Russell, of Edgewood, has been purchased by the *National Cement Company* of Modesto. This company is planning to develop the deposit.

Eliza Mine, is situated in the Humbug Mining District, in Secs. 4, 8, 9, T. 45 N., R. 8 W., 15 miles west of Yreka. Holdings consist of five claims. The strike of the vein is N. 20° E. Vein has a width of 5 to 12 feet.

Development consists of 5 tunnels; a lower tunnel 1400 feet long and others from 100 to 800 feet in length. There is a 10-stamp mill on the property.

R. H. De Witt and associates of Yreka, owners. Plans are being made to resume operations at an early date.

Jonas Salstrom Mine and ranch, located near Orleans, has recently been purchased by the *Peacock Gold Placer Mining Company*. A crew of seven is employed by the company in building a flume from the mouth of Wilder Creek where it empties into Camp Creek.

Oregon Mine, formerly known as the *Hegler* mine, which is located on Lawson's Gulch, 12 miles northwest of Yreka, at an elevation of 3800 feet, is being developed by a 900-foot crosscut tunnel driven through Greenhorn Mountain to pick up the rich vein lost in the old workings. The general course of the vein is northeast and southwest, and it dips 70 degrees east, between slate and porphyry walls. The vein varies in width from 6 inches to 6 feet. The old workings consist of three tunnels, about 80 feet apart, from 100 to 700 feet in length.

Fairchild Mine is situated west of Hawkinsville, and is being operated by F. W. Billings, of Hawkinsville. It is reported that in recent development work a vein of quartz was uncovered, said to be 8 feet wide, with some rich ore.

Osgood Mine is situated 2 miles west of Yreka. Elevation 2800 feet. Judson C. Hubbart et al., of Yreka, owners. Holdings consist of eleven claims.

Several different vein systems occur in a belt of metamorphic slate, porphyry and schist, striking north and south, with the general trend of the range, and dipping almost vertical. The belt is interrupted and broken in many places due to local disturbances. The auriferous veins follow the strike of the belt, and are usually of narrow widths. Four of these vein systems have been cut by a crosscut tunnel 116 feet in length the pay streaks occurring in narrow seams and fractures in the zones. Oftentimes the quartz is entirely lacking in the veins, the gold being deposited along fractures in the rock. About 90 per cent of the values occur as free gold, little pyrite being found. The limits of the ore zone are well defined and are determined by panning. Most of the work is confined to the 150-foot shaft, from which it is reported over $10,000 was taken. The shaft is intersected by a tunnel at a depth of 150 feet. Considerable stoping has been done from the 100-foot level to the surface, where the vein was evidently of good width, while little work has been done below that level.

Equipment consists of blacksmith shop, assay office, 5-stamp mill, 1050-lb. stamps, and amalgamation plates. Mill driven by 30-horse-power motor. The property is being reopened by the owners, and it is reported they plan to place the mill in operation at an early date.

Victory Gold Mining Company and the *Oak Bottom Placer Syndicate* have installed a large amount of equipment on the Victory properties, also have expended a large amount of money on the construction of flumes for hydraulicking the Oak Bottom claims on the South Fork of the Salmon River. It is reported that hydraulic operations are under way.

Trinity County.

Italian-American Hydraulic Mine, located on the Paulson Ranch, near Lewiston, is under operation. The gravel here is cemented and has to be blasted, which is done by running a system of tunnels on bed rock into the gravel bank, then forming T-drifts, loading with black powder and blasting.

One giant is under operation. Eight to ten men are employed. Season will last until July 1st.

Lorenz Hydraulic Mine, situated south of Weaverville, is under operation. Three giants are being operated night and day. The gravel bank is from 10 to 30 feet high. The ground is reported to run about $5,000 per acre.

North and west of Weaverville, the Lorenz Bros. are also operating two giants.

The season run is about four months, and the water supply will probably enable the operators to run until July 1st. Ten to twenty men are employed. William Lorenz and Bros., of Weaverville, owners.

Pittsburg-Comstock Mines Company started hydraulic mining on their property on Canyon Creek near Dedrick, the first of May, 1923. The company has expended a large amount of money in building a water ditch and equipment, and with the monitors operating at capacity it is reported that they plan to hydraulic 5000 yards of gravel every 24 hours. The property contains approximately 1100 acres and water for the giants is delivered under a pressure of 640 feet. Water is secured from Canyon Creek through 4 miles of flume and ditch. Three known channels have been developed on the property. These channels have a general northerly and southerly course. Depth of gravel is from 30 to 80 feet, with widths of 300 to 500 feet.

Gravel consists of large boulders of schist and granite, with an overburden of red soil. Bedrock is schist. The gold is usually coarse and occurs near and on the bedrock.

The gravel is reported to average from 25 to 50 cents per yard. One 5-inch giant is under operation, on what is known as the East Channel, at an elevation of 3000 feet. Company plans to place three giants under operation during the summer. Twenty-five men are employed. Owner, Pittsburg-Comstock Mining Company. Offices, Reno, Nevada. Herbert B. Humphrey, president; A. E. Kane, secretary; T. M. Gibson, superintendent.

Unity Hydraulic Mine, situated near Minersville, on the East Fork of the Stuart Fork of the Trinity River, is being operated by the *Nugget Bar Placer Company* of Oakland. Two giants are under operation. Twenty men are employed.

AUBURN FIELD DIVISION.

C. A. Logan, Mining Engineer.

Most of the time spent in field work in April was devoted to the Mother Lode report, and the following notes were taken incidentally to the above work. Much time was spent during May in moving the two former branch offices from Auburn and Redding to the new office in Sacramento.

Nevada County.

The report of *North Star Mines* for the past year's operations has lately been made public. The following items are of general interest:

Tons delivered to sorting plant	154,569
Tons crushed	115,600
Average yield, per ton	$9 41
Operating cost, per ton	6 99
Development cost, per ton	1 14
Combined cost, per ton, crushed	8 13

Attention was called to the fact that the cost of producing $1 in gold from this mine was 86½ cents in 1922 as compared with 54 cents for the five years beginning in 1912, the increase being attributed principally to increased costs rather than to decrease in the grade of ore. The need of developing new orebodies soon was mentioned, and the possibility of stopping or curtailing milling was discussed.

A prospecting venture of considerable interest has lately been announced at Grass Valley. For some time Roy King had believed there was a chance to pick up the extensions of some of the famous veins of the district on Alta Hill, just north of Grass Valley, where the surface is largely lava capped. The area appeared to him to be the place where the fissures should converge, if they maintain the strikes they have where worked in the big mines of the district. The *St. John* and other old quartz and gravel mines were consolidated by King as the *Grass Valley Gold Mines, Consolidated,* and the *Hilltop-Nevada Mining Co.* became interested in the project. Work was begun during April on a new vertical shaft, which, according to announced plans, will be sunk 500 feet at least and then exploratory crosscuts and drifts will be run.

Placer County.

During the spring, A. T. Thebo and associates installed equipment for placer mining on the *Sam Laird Ranch*, four miles southeast of Loomis, and began digging late in April. The deposit is the wide shallow portion of an old channel, and has little grade. An attempt to work it by hydraulic elevator some years ago was not very successful on account of the peculiar configuration of the bedrock and the difficulty of moving the equipment from one set up to another.

The present equipment comprises a drag line scraper with capacity of one cubic yard, gin pole, two steam engines of about 45-horsepower each, a 40-foot hopper, 260 feet of sluice with a grade of 8 inches in 12 feet, and 70 feet of tail sluice. Using several hundred feet of cable, the scraper delivers its load to the hopper, which is set high to furnish room for grade for the sluice and dump room for tailing. Water for washing the gravel is pumped to the head of the sluice by a centrifugal pump operated by one of the steam engines and furnishing at the time of visit about 75 inches. Operations were just getting under way at the time of visit and the actual working capacity of the scraper and the grade of the gravel were matters of uncertainty. Six men were employed. Crude oil, hauled from Sacramento, was being used for fuel and Thebo stated the cost of operating with this power compared favorably with the cost of electricity, although an electric line passes within half a mile.

An expensive flume has been built lately to convey water for power at the *American Bar Quartz claims* on the Middle Fork of American River, 2 miles south of Michigan Bluff. Development work is reported to be giving encouraging results.

F. A. Moss is continuing work in the prospect adit of the *Blue Eyes* property in Duncan Canyon and reports conditions indicate the nearness of the channel.

El Dorado County.

Big Buzzard Mine is in the SE¼ of Sec. 29, T. 11 N., R. 8 E., fourteen miles from Auburn. It is owned by Mrs. Jane Darrington, Geo. and Bert Darrington and J. P. Foster. It has been worked in a limited way for many years, but the total amount accomplished has been small, due to limited funds and frequent shut-downs. The property includes a full claim and a south extension of 1000 feet. The vein dips east and strikes north to northwest.

An inclined shaft on the vein has been sunk 267 feet, with levels at 70, 160 and 260 feet. On the 70-foot level, a drift was run north on a curving course for 80 feet and a stope about 45 feet long, 35 feet high and 5 feet thick was worked. On this level south, a drift has been run 40 feet and a thickness of 8 to 10 feet was stoped to a height of 25 feet and a length of 20 feet. The ore from the south stope is said to have returned about $14 a ton in gold, without saving the concentrate, and a little sorted ore from this stope showed satisfactory amounts of silver, copper and lead also. The results from the north stope as reported by the owners showed about one-half as much gold as on the south. On the 160-foot level north, 40 feet from the shaft and within 10 feet of the face, a dike a foot wide cuts across the vein, and from what can be seen, may mark the north boundary of the shoot. On the south on this level the drift is in 36 feet and shows heavy complex sulphide ore the width of the drift. Similar ore occurs in the shaft from here to the sump. The ore-shoot appears to be pitching south and to be principally south of the shaft, but there has not been sufficient drifting in this direction to show the extent of ore. The hanging wall on the 260-foot level is broken and heavy, white mica-schist and the footwall is smoothly polished, hard amphibolite-schist. There is only 15

feet of drifting on the 260-foot level, in a northerly direction, and the heavy ore is in evidence here on the south side of shaft. Besides the crushing of the hanging wall, there has been some post-mineral movement on the footwall and within the vein about two feet from the footwall.

The mine shows several kinds of ore, with pyrite, chalcopyrite, galena and zincblende. The heavy complex ore carries a good deal of zincblende, and the values are reported to be capriciously distributed, as far as assays show. What system of treatment will be finally adopted to mill the ores of the mine has not been determined, but flotation tests are reported to have given satisfaction, and differential flotation may solve the problem. There is a 5-stamp mill which has not given good results. The hoist is operated by a 19-horsepower gas engine. A perpetual water supply could be pumped from the river, one-half mile distant and 400 feet lower. Electric power is about 6 miles distant.

Jones Mine is near Diamond Springs and is east of the Mother Lode on a quartz stringer a few inches wide, striking east. It has made some production as a pocket mine previous to present operations. It was reopened in 1922 by J. M. Brown, Mrs. Allie Lange and others of Bakersfield. Since reopening, it has made a few thousand dollars production in pocket gold, which is recovered by rocking. The pay appears to have been deposited where the vein approaches dikes which run with the general course of the country rocks, northwest.

There is a shaft with three levels at 75, 165 and 225 feet depth. There was about 500 feet of drifting on the first level, 100 feet each east and west on the second, and drifts were just being started late in March on the third level. The property is equipped with one 25-horsepower and one 10-horsepower gas engine, 9-inch by 8-inch air compressor, hoist and improved jackhead pump. About 60 gallons of water is pumped per minute.

Jumbo Placer Mine is a creek placer a mile west of Clarksville. It was formerly known as the *White Rock Land and Mineral Company.* It comprises 80 acres, of which possibly one-fourth or less is a shallow gravel deposit along the meandering course of Carson Creek. The ground has been worked in part by sinking shafts to bedrock and drifting out small areas as long as the ground would stand without timber, and in part by surface placering. The gravel is 8 to 15 feet deep.

H. S. Brinley of Seattle has taken a Marion No. 31 drag line scraper outfit to the property and on June 12 was preparing for a trial run. The scraper outfit is on a caterpillar mount and the bucket works from a 50-foot boom, making it possible to work a strip 120 feet wide, and the set-up can be changed in 3 hours, making for much greater mobility than with the scraper working from a gin pole.

There is a scarcity of water in summer on the property, and after the test run it is not likely that much can be done until the winter storms begin. Water will be pumped to the sluices from a reservoir. The scraper will deliver to a hopper at the head of the sluices, raised enough to give dump room, and tailings will be stored in the worked-out pits.

A gasoline engine and pump have been taken to the *Lukens Mine,* three and a half miles from Cool on the east side of American River, to

unwater the old workings and investigate the prospect said to have been left in the bottom. A. M. Dunlop of Auburn is in charge of work.

There are two shafts on the property, 150 feet apart, and 60 and 90 feet deep, respectively, being connected by a drift. The small vein has yielded some high grade ore, but there is no exact record of the amount.

Work is going on at the *Sliger Mine* near Spanish Dry Diggings, preparatory to an announced reopening. The Sliger was found in 1864 and was noted as a producer of rich ore. The Sliger patent contains only 5 acres, covers 530 feet on the vein, and was worked to a depth of 298 feet and a length of 231 feet, according to the owner's records. Ore to a depth of 200 feet and a length of 160 feet is supposed to have been milled. There was a 5-stamp mill on the property in the seventies.

Amador County.

The main shaft at the *Argonaut Mine* has been concreted to a depth of 40 feet and the hoist has been set on new concrete foundation. Unwatering is reported completed.

The Elephant Deep Hydraulic Mine at Volcano has been in operation lately under lease.

Twenty stamps of the mill are in operation at the *Fremont Mine* and Superintendent B. I. Hoxie reports that lack of labor is the only hindrance to operating on a larger scale.

Work was begun in April on the Big Tunnel of the *Mammoth Mine* south of Jackson near Mokelumne River. This was one of the mines worked by Captain Nevills, thirty-six years ago.

Moore Mining Company has been reorganized, with several changes in personnel. The company was having trouble keeping the mill supplied with ore and at the same time carrying on necessary development work. Plans for deepening the shaft and opening new ground have been announced.

Wait Marble Deposit. A. L. Wait of Plymouth has a deposit of red marble on the Drytown-Sacramento road, three miles from Drytown and eight miles from the railroad at Carbondale. The marble outcrops beside the road over an area 160 feet by 400 feet. A pit opened here would have to be pumped as the surface is flat. The stone has a very pleasing dark red color when polished. The deposit has never been drilled or otherwise prospected, so nothing is known of its depth or tonnage.

Tunnel Hill Ochre Deposit is three miles by road from the railroad at Martel, near the Mokelumne Hill road. A. F. Roberts of Jackson has a five year lease. This is a large deposit of yellow ochre, forming the bedrock of an old hydraulic mine. One or two small shipments were made several years ago for testing purposes, but there has been no work since.

Calaveras County.

La Fortuna Mines Company, a trust corporation, 316 Hobart Building, San Francisco, have begun work on the *Lucas Mine* on Mokelumne River, one-half mile upstream from the Jackson-Mokelumne Hill road.

This is an old property, formerly productive. It contains three claims, one on the Lucas vein which has been developed, and two on the parallel Pilot vein to the east.

The Lucas vein strikes nearly north and dips 60 to 65 degrees west, in diorite. It has been developed by an adit which is a crosscut 260 feet to the vein, then drifted south 574 feet on the vein. A winze was sunk from the drift 440 feet from the portal to a depth of 131 feet on the vein, giving a total depth of 273 feet on the vein. In the winze 60 feet below the adit a level was turned and drifted 108 feet north and 109 feet south, with a crosscut 22 feet east in the north drift. The vein is of good width in the adit and has been stoped thence to the surface for a length of 285 feet. In this distance two ore shoots are reported, the North shoot 65 feet long and the Mexican shoot 106 feet long. While the present operators report that the vein assays fairly well here for a distance of 405 feet, it would appear from their records that the pay ore was in these two shoots. Veins striking southeast and dipping southwest cross and fault the main vein a few feet, and the ore appears to occur at and near these crossings. The last ore milled is claimed to have plated $6.35 a ton, but no definite record is available. The winze was full of water at the time of visit, but it was stated that the vein has an average width of 3½ feet of white quartz in the 60-foot level, assaying on an average much lower than in the adit above. The east crosscut on the lower level was started to follow one of the cross veins found above, and the low assays might be due to this level not having been run to the larger shoot, if the length stated for the drift is right.

The property is supplied with electric power from a line passing the adit. It is equipped with a 5-drill air compressor, 40-horsepower motor and air drills and small buildings. A pump was to be installed to unwater the winze.

Maloney Prospect, adjoining the town of Mokelumne Hill, is to be prospected by John Seip and associates. The claim contains a wide, solid quartz vein, which strikes north and dips 80 degrees west, with a cross vein. Both veins have been worked only a little near the surface by pocket hunters.

Disappointing results have been reported from the *Red Hill Gravel Mine,* 2½ miles from Mokelumne Hill. After starting work on a flattering prospect that appeared to be in new ground, old workings are said to have been encountered, of which there was no record, where early day miners had removed the best gravel.

Tuolumne County.

A 2-stamp mill, concentrator and compressor have been put on the *App Mine* and some ore is being crushed from shallow workings. C. W. Ayers, D. E. McPherson and J. A. Keyes are interested.

Encouraging reports continue from the *Casa Madera* prospect on the East Belt in the Confidence district. This is so far a surface showing but the company has great faith in it and has placed a large order for lumber for buildings.

Nevada Wonder Mining Company has abandoned the option on the *Chileno* and other claims of a large group on Jackass Hill near Tuttletown. As soon as they quit, the Chileno was taken under lease and

option by L. L. Coffer and G. L. Warrington. They were getting an old stamp mill in shape and putting in a Huntington mill late in March, preparatory to stoping and milling ore from the 150-foot level.

The Chileno was opened to a depth of about 500 feet on a 74-degree incline by the former company, and levels were run at 150 and 450 feet. An ore shoot of very good width and tenor and about 160 feet long was opened on the 150-foot level. On the 450-foot level over 1000 feet of work was done, of which over 500 feet was crosscutting. This level did not come up to expectations. They also drove the Bailey crosscut adit over 500 feet southwest and south toward the Chileno, but found no ore although several barren veins were cut.

The long drift being driven northward from the *Crystalline* under the *Alabama* property had reached a point at the end of March where the *Tonopah Mining Company* expected to begin the real prospecting of the Alabama claim, for the downward extension of the Alabama ore shoot. This work will be done in the area under the old shaft, and on the 600-foot level. This level is also being run on the south, under the Crystalline group. No conclusive results have been reported yet from these properties, as attention has been devoted to running the drift, and crosscutting is yet to be done to explore the country on the two sides of it. Since the above was written, the company is reported to have quit work.

Omega Mine, adjoining the Alabama on the north, was unwatered by the end of February and at the end of March the shaft had been repaired and work was being done upon the 600-foot level, clearing out and catching up ground preparatory to exploration. P. A. Herivel of Jamestown is in charge.

Sonora Wonder Mine, beside the state highway about a mile below Sonora, is being prospected by W. J. Woolsey. A light prospecting hoist and small engine are in use and late in March the shaft was down about 70 feet. A good prospect is reported.

SAN FRANCISCO FIELD DIVISION.

C. McK. Laizure, Mining Engineer.

Mendocino County.

COAL IN MENDOCINO COUNTY.

Historical:

The occurrence of workable bodies of coal in Mendocino County has been known for many years. Reports made more than fifty years ago are available describing the deposits and containing analyses of the coal. Goodyear,[1] in his report published in 1877, referring to known California coal localities says:

"Fourth. On the Middle Fork of the Eel River about seven or eight miles south of the village of Round Val'ey in Mendocino County, and in the northwest corner of section 11, T. 21 N., R. 13 W., M. D. M., there is a bed of coal exposed crossing the channel of the river in a direction N. 45°–50° W. magnetic and dipping from 20°–30° northeast.

"This bed is from fourteen to fifteen feet thick and is all good coal, with the exception of a single streak of shale in the middle of it, about five or six inches in thickness. * * *

[1]Goodyear, W. A., Coal Mines of the Pacific Coast. Bancroft & Co., publishers, San Francisco, 1877.

"The quality of the coal itself is a little better than that of the Mount Diablo mines. In fact it is the best coal which I have seen from anywhere in California; while at the same time it is the thickest bed of a marketable quality of coal that is yet known to exist within the state."

Another early report on the Eel River coal deposit is found in 'Mineral Resources West of the Rocky Mountains,' by R. W. Raymond, U. S. Commissioner of Mining Statistics, 1875. At that time, it will be noted, the deposit was practically isolated. The Raymond report, in part, states:

"The Mount Vernon Coal Mine is situated on both sides of Middle Eel River (a mountain torrent), in townships 21 and 22 north, range 13 west, Mendocino County, California, and lies northwesterly from Ukiah, distant in an airline, thirty-eight miles, and about sixty miles by the county road, which has been constructed from Ukiah City to Round Valley, a government military station. This road at its crossing of Middle Eel River passes within two miles of the Mount Vernon Mine and there is a good trail along the riverside from the road to the property. Noyo is its nearest seaport. A circuitous road forty-two miles long connects the two places. The projected line of the North Pacific Railroad (a California enterprise) passes within four miles of the mine, crossing at the junction of Middle and South Eel rivers. The property consists of 7200 acres of land.

"No work of importance has as yet been done to develop the resources of this coal field. The value of the property can only be prospectively estimated. The coal has been traced six miles. The land is admirably located with reference to the strike and dip of the coal as shown by its various outcroppings. All the property on which the coal is exposed and the land into which it dips are covered by United States patents.

"Commencing at a point about one mile south 35° east from the coal outcrop in the river, the coal first makes its appearance in a creek on the side of a steep hill, covered by a thin layer of shell limestone broken up and mixed with decomposed shale and soil colored red with ferruginous matter. Tracing along the line of the croppings north 35° west to the banks of the river, over undulations caused by landslides, which gradually flatten as the stream is approached, and in which detritus and bowlders of all sizes lie scattered in profusion, an immense body of coal is found, entirely denuded of all its encompassing strata. For nearly 600 feet in length, with a height of 14 feet, a body of coal is exposed, forming an abrupt bluff, over which the water runs, occasionally detaching huge masses of coal from the outcrop and hurling them down the stream. * * *

"The thickness of the strata as here exposed is about 20 feet. High water prevented the accurate measurement of the bed. Actual measurement, where practicable, showed 14 feet of coal in the stream, and a calculation of the thickness of this bed from the encompassing walls showed it to have been 20 feet through, from 5 to 6 feet having been washed away. These immense croppings extend across the river, a width of 350 feet. The banks on both sides being low, the coal beyond the river gradually enters the detritus and soil, and for a distance of several hundred feet southeast lies only a few feet underground. A crosscut made on the surface 400 feet from the river on the northwest side, is said to have shown a solid stratum of coal 20 feet thick. The coal in the river lies between two strata of gray argillaceous shale. The edges of the upturned strata have slacked and assumed a reddish brown color. The shale underlying the main coal-bed contains several seams of coal, varying in size from 1 to 8 inches. The exposed thickness at the surface of the shales underlying the coal is about 19 feet, the dip being 21 degrees. The shale is succeeded by a thin bed composed of fossil oyster shells, some of which are very large. A soft yellow and brown sandstone, partly disintegrated, underlies it.

"An examination of the overlying shale on the southeast side of the river, below high-water mark, and a foot below the surface, showed it to be of grayish color, hard, compact and of such a nature as will form a strong and solid roof, impervious to water, and a great protection for the future working of the mine. Overlying the shale is sandstone, soft and totally disintegrated, and along the banks of the river detritus and metamorphosed rock overlie the sandstone. * * *

"Three-quarters of a mile northwest of the river croppings, under an abrupt bank (the sides of which have been cut and washed away) at an altitude of about 200 feet, a bed of coal 6 feet thick has been exposed. * * * Three hundred feet above these croppings, about a mile and a half northwest of the river croppings, coal again shows itself in a mountain creek, issuing from an abrupt bank of columnar sandstone about 60 feet high. Black dirt and fragments of coal on all sides, embedded in a whitish clay, indicate the presence of coal. No definite stratum has here been found; nor has the ground been prospected. Crossing to the north the ridge of sandstone, shale and detritus, and descending on the opposite side of the hill, a distance of four and a half miles from the croppings in the river, coal again makes its appearance on the side of a creek. * * * Northwesterly for half a mile the coal can still be traced.

"The coal is hard and bituminous. It burns freely and with a bright flame, gives a good compact coke, and leaves but little ash. A proof of its purity is the circumstance that the water which pours over it from the springs remains pure and drinkable. The coal gives a strong heat and will prove an excellent coal for generating steam, producing gas,[1] and for domestic use.

"Although exposed to the action of the air and water, it does not slack to any great extent, but remains remarkably hard and compact. From repeated experiments with it in large quantities, a mere trace of sulphur is perceptible.

Analysis of coal from vein running through Eel River to Round Valley: S. W. Glazier, Esq (for the company).

"Dear Sir: I have made a careful analysis of a specimen of coal received from you and have arrived at the following results:

"Specific gravity	1.282
Volatile combustible substance	40.20 per cent
Fixed carbon	49.70 per cent
Moisture	6.70 per cent
Ashes	3.00 per cent
Sulphur	0.40 per cent

"Amount of gas evolved, 37 cubic feet for 10 pounds Avd. of the coal.

"The coal burns freely, yields a fire light and compact and sonorous coke, and its ashes are of a reddish gray color and do not slag.

"The amount of sulphur is so minute that it does not make itself perceptible to the smell in burning the coal.

Respectfully yours,

L. Falkenau, State Assayer.

"San Francisco, December 8, 1870."

In a detailed report on the Chemical Examination of Pacific Coast Coals made in 1872 by S. F. Peckham,[2] the author gives the results of analyses of 20 samples of foreign and California coals. This table is here reprinted in full:

TABLE OF ANALYSES OF PACIFIC COAST COALS.

Nos.	Locality	Specific gravity	Volatile under 250° (water)	Volatile under white heat	Fixed carbon	Total combustible	Ash
	California:						
59	Black Diamond, Monte Diablo	1.4150	13.015	42.15	34.235	76.385	10.600
63	Black Diamond, Monte Diablo	1.3491	13.08	42.93	38.855	81.785	5.135
62a	Clark Bed, Monte Diablo	1.3539	11.64	45.67	34.555	80.225	8.195
60	Union Mine, Monte Diablo	1.3143	11.56	47.365	34.43	81.795	6.645
61	Stewart's Mine, Monte Diablo	1.3613	12.82	46.915	53.59	80.505	6.675
56	Corral Hollow, Alameda County	1.4321	15.015	41.435	30.805	72.240	12.745
57a	Eel River, Mendocino County	1.3596	8.14	45.54	38.67	84.210	7.660
57b	Eel River, Mendocino County	1.3571	8.595	47.315	37.485	84.800	6.605
57c	Eel River, Mendocino County	1.3820	8.555	48.51	37.88	86.390	5.055
	Pacific Coast, north of California:						
51	Bellingham Bay	1.4151	7.375	39.85	38.655	78.505	14.120
52	Nanaimo, Vancouver Island	1.3492	2.795	43.125	42.055	85.180	12.025
53	Comox, Vancouver Island	1.3401	2.015	32.73	56.14	88.870	9.115
62	Queen Charlotte Island	1.6781	1.18	17.25	49.835	67.085	31.735
54	Coos Bay, Oregon	1.4150	9.13	36.51	46.705	83.215	7.655
65	Nanaimo, New Co., Rosenfeld and Birmingham	1.3144	3.565	40.195	56.54	90.735	5.750
68	Seattle, Washington, Territory	1.3919	13.85	38.375	41.74	80.115	6.035
	Foreign:						
53	Lata, Chili	1.3043	3.545	43.885	43.915	87.800	8.705
66	Saghalien, North Pacific	1.3136	1.925	36.61	52.80	89.410	8.665
67	Los Bronces, Mexico	1.7227	7.38	4.005	85.385	89.390	3.230
64	Sydney, Australia (Wall's End)	1.3471	3.01	31.165	55.56	86.725	10.265

[1]Yield of gas per ton of coal, 11,250 cubic feet; illuminating power of gas, 15.3 candles; carbonic acid, 7 per cent.—London Analysis.

[2]Peckham, S. F., Chemical Examination of Pacific Coast Coals. Geological Survey of California, Economical Geology of the Coast Ranges; Vol. II, Geology.

Commenting on the results shown, Peckham continues:

"Arranged according to the total amount of combustible material that they contain, their relative value would appear as follows:

1.	No. 65 (Nanaimo)	90.735 per cent
2.	No. 66 (Saghalien)	89.41 per cent
3.	No. 67 (Los Bronces)	89.39 per cent
4.	No. 55 (Comox)	88.87 per cent
5.	No. 53 (Chili)	87.80 per cent
6.	No. 64 (Sydney)	86.725 per cent
7.	No. 57c (Eel River)	86.39 per cent
8.	No. 52 (Nanaimo)	85.18 per cent
9.	No. 57b (Eel River)	84.80 per cent
10.	No. 57a (Eel River)	84.21 per cent
11.	No. 54 (Coos Bay)	83.215 per cent
12.	No. 60 (Union Mine)	81.795 per cent
13.	No. 63 (Black Diamond)	81.785 per cent
14.	No. 61 (Stewart's Mine)	80.505 per cent
15.	No. 62a (Clark Bed)	80.225 per cent
16.	No. 68 (Seattle)	80.115 per cent
17.	No. 51 (Bellingham Bay)	78.505 per cent
18.	No. 59 (Black Diamond)	76.385 per cent
19.	No. 56 (Corral Hollow)	72.240 per cent
20.	No. 62 (Q. Charlotte Island)	67.085 per cent

Nos. 1 and 2 are caking coals. No. 3 is an anthracite. Nos. 4 and 5 are caking coals. No. 7, a noncaking coal, appears to be more valuable, and Nos. 9 and 10 but little less valuable than No. 8; but this inference may not be a fair one, * * *. In Nos. 7, 9 and 10 the percentage of this volatile matter (water volatile under 250°) is two and one-half times greater than in No. 8, while the percentage of ash in No. 8 is nearly twice that found in the others; yet No. 8 may be much more valuable than either of the three."

The following data on Eel River coal are taken from a table of analyses of California coals published in Report XII of the State Mineralogist, 1894:

Locality	Color of powder	Color of ash	Coking qualities	Water	Volatile matter	Fixed carbon	Ash	Authority
Middle Fork Eel River:								
Main tunnel	Glistening black, brown tinge	White	None	8.00	39.25	46.25	6.50	Mathyas
Incline, 20 feet down, cropping in river	Glistening black, brown tinge	Reddish white	None	7.50	17.75	47.75	27.00	Mathyas
Top streak	Glistening black, brown tinge	Reddish white	None	6.75	40.00	47.50	5.75	Mathyas
Bottom streak	Glistening black, brown tinge	Reddish white	None	6.25	31.50	46.25	16.00	Mathyas

Two analyses and tests made by Louis Falkenau, state assayer, and by Thos. Price & Son, respectively, in August, 1890, are appended:

"No. 14,357 "San Francisco, August 2, 1890.

"J. L. Flood, Esq.,

"Dear Sir: I have made a careful technical analysis of a sample of coal received from you, marked 'Eel River Coal Mine, Mendocino County,' and a sample marked 'Wellington,' with the following results:

	Eel River	Wellington
"Specific gravity	1.302	1.300
Moisture	7.9 per cent	2.4 per cent
Volatile combustible	36.2 per cent	33.45 per cent
Fixed carbon	53.5 per cent	58.6 per cent
Sulphur	0.4 per cent	0.15 per cent
Ashes	2.0 per cent	5.4 per cent

"The cokes furnished by the two coals (sample of which I hand you with this report) are the same in appearance, but that of the Eel River coal contains 3.6 per cent of ashes, while that of the Wellington contains 8.4 per cent.

"The Eel River coal weighs 81 pounds per cubic foot and in place 24.7 cubic feet will weigh a ton of 2000 pounds, but to store a ton, about 42 cubic feet will be required.

"As the sample of Eel River coal is, according to your statement, from the surface exposed to extraneous moisture, it is to be assumed that the coal at greater depth will contain much less moisture. If the Eel River and Wellington are both figured to dry coal, their carbon compares as follows:

	Eel River	Wellington
"Volatile combustion	39.73 per cent	34.42 per cent
Fixed carbon	58.19 per cent	60.04 per cent
Total carbon	97.92 per cent	94.46 per cent

"From the foregoing I consider sample of Eel River coal as equal to the Wellington for domestic use and as fuel for steam boilers.

Yours respectfully,

(Signed) Louis Falkenau."

"August 11, 1890.

"Analysis of Two Samples of Coal for Geo. R. Wells, Esq.

	"A"	"B"
"Water	6.70 per cent	2.55 per cent
Volatile carbonaceous matter	52.89 per cent	62.01 per cent
Fixed carbon	38.66 per cent	29.64 per cent
Ash	1.75 per cent	5.80 per cent
	100.00 per cent	100.00 per cent
Sulphur	2.49 per cent	1.81 per cent

"The sulphur is present in the form of sulphates of lime.

"By the combustion of two samples of coal of 1 pound each, the following quantities of water were evaporated:

"Sample 1—13.86 pounds. Sample 2—12.8 pounds.

"Both samples form a good soft coke.

Thomas Price & Son."

Development:

From 1870, or earlier, to 1922, the Eel River coal deposits have remained practically undeveloped and one may reasonably ask, "Why has a vein of coal, of the size and quality indicated by the surface exposures and analyses, not been developed during all this time, and the coal placed on the market?"

During the '70s, at the time the coal industry of the state reached its maximum development and the coal mines of the Mount Diablo district were in active operation, lack of transportation facilities and distance from market doubtless prevented economic exploitation of the Mendocino County area. Tunnels and other openings made in the early days have been abandoned and have long since caved or been obliterated by landslides. The prominent ledge in the river bed described in early reports has also been eroded away and the outcrop nearly covered with debris brought down by the river during high water.

The production of petroleum in California began about 1874, and the steady growth of the oil industry which has supplied an abundance of cheap fuel, has caused little attention to be paid to California's coal deposits. Most of these have been looked upon from the first as being of inferior quality, and under the circumstances offering but little inducement for the investment of capital.

Furthermore in the Eel River district the most prominent exposures and the greater part, if not all, of the known coal land was covered by

United States patents and included in a tract of 7200 acres, that early passed into the hands of strong financial interests headed by the James L. Flood estate, this tract being known as the Flood Ranch.

The owners of this property have not been particularly interested in developing the coal deposit and for various reasons have made no effort to place their property on a producing basis.

This inactivity on their part has retarded development of the entire Eel River field and it was not until early this year (1923) that a serious effort was made to develop a producing coal mine in this district.

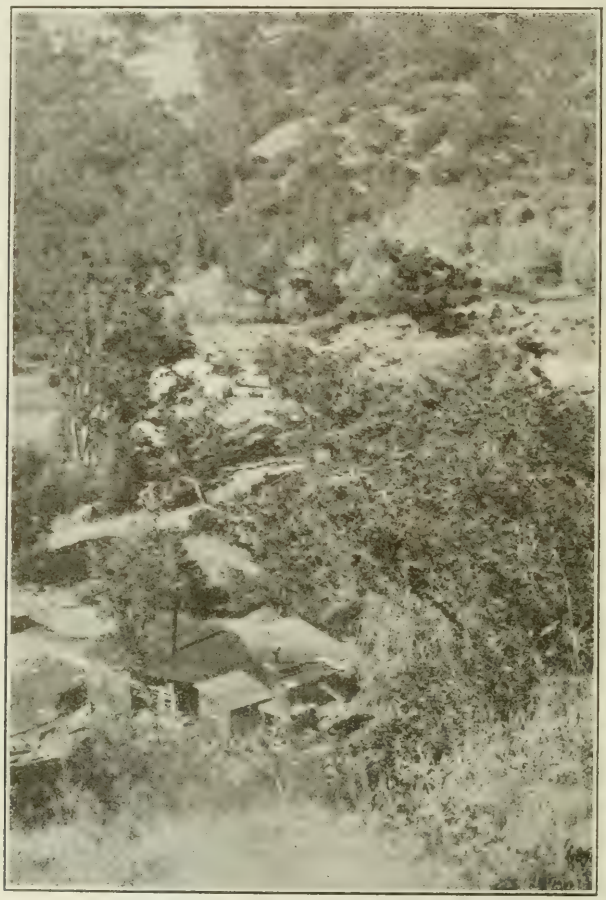


Photo No. 1. Camp and Surface Works. Camp Carbon Coal Mine, Mendocino County, Cal.

Camp Carbon Coal Mine (formerly the *Thomas Mine*).

This property contains 1040 acres and includes the SE¼ of Sec. 13; the E½ of Sec. 24; the E½, the NW¼, and the N½ of SW¼ of Sec. 25, all in T. 21 N., R. 13 W., M. D. M. At its nearest point it is nearly due south and about 2 miles distant from the coal outcrop in the Eel River at the mouth of Salt Creek. The property extends north and south 2½ miles, varying in width from one-half to one mile.

The Eel River coal was traced south of the river soon after the original discovery and an outcrop noted on this property near the center of the section line common to sections 13 and 24. A few prospect holes were dug on section 24 in this vicinity and later, about 1903, a tunnel was run southwesterly for a distance of 70 feet. This tunnel

Photo No. 2. Main entry, looking east. Camp Carbon Coal Mine, Mendocino County, Cal.

was almost entirely in coal, but its direction was practically parallel to the outcrop. After demonstrating the occurrence of a good size vein at this point it was allowed to cave and no further development was attempted pending the opening up of the deposit on the Flood Ranch, nearer the river.

During the past year the latent possibilities of the Thomas property attracted the attention of Mr. A. L. Fisher, 702 Hobart Bldg., San Francisco. After going over the property carefully Mr. Fisher was so impressed with the showing that arrangement was made for its immediate development.

Work was started in February, 1923. Camp Carbon with accommodations for 15 to 20 men was established near the point where the old tunnel had been run, mining and hoisting equipment were brought in, and 7 to 9 men put to work.

The first work consisted in clearing away the debris in the vicinity of the old tunnel and making an open cut so as to clearly define the vein. Although the coal was broken and shattered near the surface, the face of the cut exposed a vein from 12 to 14 feet in thickness, apparently dipping east about 20 degrees.

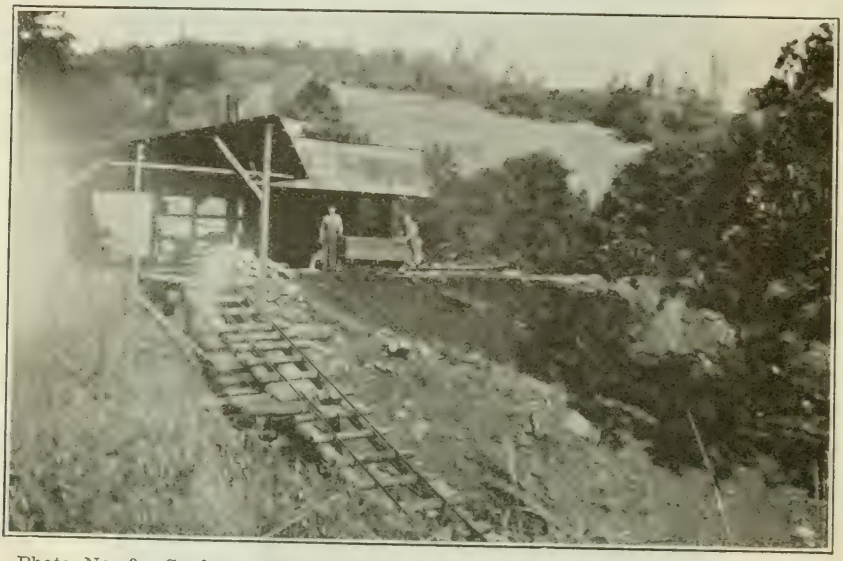


Photo No. 3. Surface Works and Incline. Camp Carbon Coal Mine, Mendocino County, Cal.

The main entry, 8 feet wide at the bottom, 7 feet at the top and 6 feet high was started here and run east following the dip of the coal. When in about 40 feet it was found that the slope of the incline was too great as it ran into the yellow clay floor underlying the coal. From this point on the grade was gradually flattened to about 10 degrees which is nearer the average dip of the coal so far developed.

At the time of visit on May 1, 1923, the entry was in 95 feet, at which point it was again practically in the center of the vein, there being about 3 feet of coal underneath the car tracks and 3 feet above the top lagging. So far as could be seen there was no parting of shale or other impurities in the coal and no visible pyrite.

The surface drainage in the vicinity of the main entry is toward the north. As the incline runs east it passes under the flow from several springs farther up the hill to the south. Owing to local surface depressions the face of the entry was only a short distance vertically below

the surface and progress was slow on account of the wet ground; heavy timbering and close lagging being required to hold it.

On June 1st the incline had been advanced to 135 feet,[1] and the face of the entry was just beyond the point where the last and largest surface watercourse crosses. For some distance, when under this watercourse, the coal vein was pinched down and averaged only about 4½ feet in thickness, but it began to widen up again after this point was passed. Beyond this watercourse the surface rises more steeply toward the east, and as the entry is advanced the vertical depth will increase much more rapidly.

It is expected that the coal will then become firmer than it was where covered only with a thin, water-soaked and more or less disintegrated shale and sandstone roof. Even in this area portions of the vein are quite solid and if desired chunks of coal a foot in diameter could be obtained by careful mining. Efforts have been confined, however, to advancing the entry as fast as possible and the coal is churn drilled and shot without regard to the condition in which it is recovered.

On June 15th the working force was increased to fourteen men and the mine was being operated two shifts per day. The Camp Carbon coal is of uniform black color. The more solid portions break with a conchoidal fracture, resembling in this respect Cannel coal. It burns with a long flame, produces little ash, and is used at the mine for domestic purposes and operation of the steam hoist with very satisfactory results.

The following is an analysis made by an independent assayer on a sample taken soon after the entry was started:

"Volatile combined matter	54.2	per cent
Fixed carbon	43.8	per cent
Ash	2.0	per cent
Coke	45.8	per cent
Ash in coke	4.56	per cent
B.t.u. (coal)	13,991	

"This coal is classified as sub-bituminous, the percentage of fixed carbon indicating a semi-coking coal of exceptional low ash content. The percentage of fixed carbon is not high but the fuel value is, and it should be excellent for household and industrial purposes."

That portion of the Coast Range containing the Camp Carbon Coal Mine and other Eel River deposits is not included in the areas mapped by the U. S. Geological Survey, and there are no maps available showing in any detail either the areal geology or the topography of this region.

The ground rises at a fairly uniform slope from Eel River to the Camp Carbon property and continues to rise to the south and east from the present mine workings. In the vicinity of the river there is evidence of much faulting and intrusions of metamorphic rocks. Farther south in the vicinity of the Camp Carbon Mine the formations are less disturbed and there is a possibility that the coal may be practically continuous over a large portion of the Camp Carbon Mine acreage.

Until a more detailed study is made it is impossible to definitely correlate this vein with the one exposed in the river. Mr. Fisher believes that the Camp Carbon coal differs from the former in some respects and that it is an entirely distinct vein.

Neither has the age of the Camp Carbon coal been determined. Some fossils were gathered from the overlying sandstone but they were too

[1]Since the above was written the entry has been advanced approximately 500 feet. Thickness of vein at face about 12 feet.

imperfect and too few to form a suitable marker for determination. The formations adjacent to the coal, near the river, have been classified as Cretaceous, and there is reason to believe that the Eel River coal measures are of Cretaceous age, in contrast to most of the coal in the state which is generally assigned to the Tertiary (Eocene) Period. Except for a small area of Tertiary rocks near Point Arena, a strip of Cretaceous formations along the coast and small areas of Quarternary deposits along the Russian River, and near Laytonville and Round Valley, the whole of Mendocino County including the Eel River section is shown on the Geological Map of California[1] as Franciscan.

The Camp Carbon Mine has an elevation of approximately 1800 feet and the workings are estimated to be from 700 to 900 feet above the outcrop in Eel River. It is 6 miles southeast of Dos Rios, the nearest railroad point, and 2½ miles by road from the river. There is a good water supply from several springs and fair timber on the property. Climatic conditions are favorable and mining can be carried on the year round without difficulty.

The development to date at the Camp Carbon Coal Mine, upon observation, presents two impressive features: first, that coal of such quantity and quality as the small amount of work already done has shown to undoubtedly exist on the property, could lie undeveloped for so many years; and, secondly, the substantial and (coal) miner-like manner in which it is being opened up and equipped for production.

With the main entry 8′ x 7′ x 6′ high, going in directly on the dip of the vein every foot advance represents a certain tonnage of coal and exploitation is rendered easy and efficient.

Since the completion of the Northwestern Pacific Railroad from San Francisco to Eureka the main transportation problem in this field has been solved. Connection between the railroad and the Camp Carbon Mine can be made readily with a spur track or aerial tramway with downhill trip for the load.

The exceptional quality of the Eel River coal attested by analyses and practical use at the mine; the added possibility that this coal may have valuable coking qualities and the large tonnage that is being shown to exist, marks the opening up of the Camp Carbon Coal Mine as one of the important recent developments in mining in this state.

Camp Carbon Coal Mine is under purchase contract to *Carbon Company,* 312 Henshaw Bldg., Oakland California. A. N. Massey, an experienced coal-mine superintendent, is in charge of operations at the mine.

LOS ANGELES FIELD DIVISION.

W. B. Tucker, Mining Engineer.

Imperial County.

The California Gypsum Corporation. This company owns extensive deposits of gypsum, located in the Fish Creek Mountains, in Sec. 29, T. 13 S., R. 9 E., S. B. M., about 45 miles northeast of El Centro, in the western part of Imperial County, near the San Diego line.

Active development of these deposits was started early in 1922, and, since the last report made on the property, a crushing and refining plant of 400 tons capacity has been built at the new station at Dun-

[1]Geological map of the State of California, California State Mining Bureau, 1916.

away, on the San Diego and Eastern Railroad, a few miles west of Dixieland. A narrow gauge railroad has been built from this point to the mine, a distance of twenty-six miles.

The company is shipping from 200 to 300 tons a day to the Blue Diamond Materials Company, at Los Angeles.

Samuel W. Dunaway is managing director of the company.

Bibliography: State Mineralogist Reports XVIII, p. 421; XIX, p. 31.

Kern County.

Poso Mine comprises 13 claims, located in the Pine Mountains district, in Secs. 30 and 31, T. 27 S., R. 20 E., 22 miles northeast of Bakersfield, on Poso Creek. Elevation 1800 feet.

It was discovered in 1915 by W. H. Fritz, and acquired in 1922 by the Poso Mining and Milling Company of Bakersfield. E. W. McCutchen, president; J. A. Lewis, secretary.

Three parallel veins occur in the granite, striking N. 45° W. and dipping 65° S.W., width 2 to 4 feet. The ore is free milling gold quartz with some hematite and pyrite. It also carries values in silver.

Development consists of a shaft sunk on one vein to a depth of 120 feet on an incline of 70 degrees. From Poso Creek a tunnel is driven on this vein 365 feet to the northwest, connecting with the shaft at a depth of 120 feet. The vein developed in this tunnel shows from 18 inches to 4 feet of oxidized quartz, mineralized with hematite and some iron pyrite. An ore shoot was developed 210 feet from the portal of the tunnel, which was said to average from $10 to $12 in gold, with some silver values. Length of pay shoot is 150 feet, with average width of 2 feet. Twenty feet southeast of the shaft the vein is cut by a N. 75° E. fault, dipping 40° S.E., which also cuts off the ore.

This ore shoot has been stoped at intervals above the tunnel level for 50 feet.

Mine equipment: 16-horsepower gas engine hoist, compressor and air drills.

Mill: Blake crusher, 8″ x 10″; 5-foot Huntington mill, Wilfley concentrator driven by 37½-horsepower Fairbanks-Morse type Y, semi-Diesel vertical engine.

Five men are employed.

The Tropico Mines, located 5 miles northwest of Rosamond, in Secs. 10, 11, 14 and 15, T. 9 N., R. 13 W., is reported to have been taken over under lease and bond by J. F. White, of Los Angeles. The workings consist of a shaft 300 feet deep, and 2000 feet of drifts.

During the year 1922, the property has been under lease to H. Clifford Burton, of Rosamond.

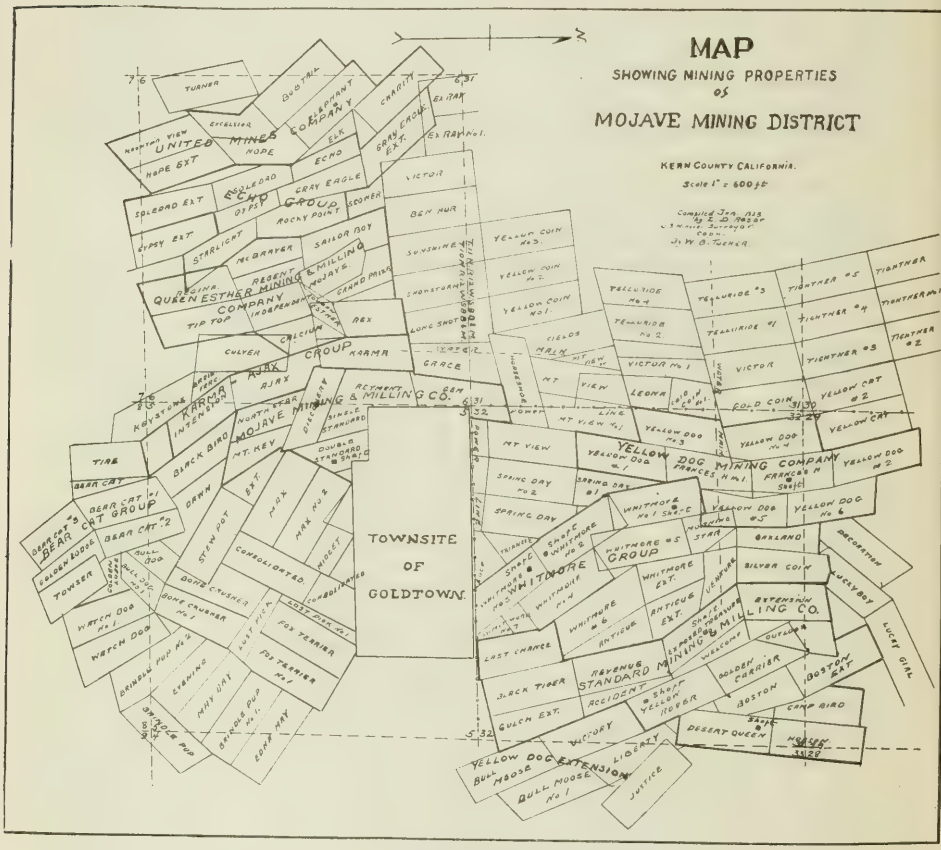
It is stated that a contract has been let to sink the shaft to the 700-foot level. Owners: Tropico Mining and Milling Co., Rosamond, Cal.

Bibliography: State Mineralogist's Report XIV, p. 512.

AMALIE MINING DISTRICT.

Zenda Mine is situated 12 miles northeast of Caliente, in Sec. 30, T. 30 S., R. 33 E. Owner, Zenda Gold Mining Company of New York; Arthur D. Storke, general manager. Since the XVII Report of the State Mineralogist was published, a 200-ton cyanide plant has been completed, which is now under operation. The company also recently completed a three-mile power line connecting with the main power line of the Southern California Edison Company.

Bibliography: State Mineralogist's Report XIV, p. 515.



MOJAVE MINING DISTRICT.

The Mojave Mining District is situated in a group of small hills, centering around Soledad Butte. These are located 4 miles southwest of Mojave, the junction point of the Santa Fe and Southern Pacific railroads, and include the territory in T. 10 and 11 N., R. 11, 12 and 13 W., S. B. M. (See claim map.)

Topography: The topography presents low ranges of hills and isolated peaks of igneous or volcanic origin, which rise not more than 1500 to 2000 feet above the level of the desert; the valleys, which are

of much greater area than the hills, are typical waste-filled interior basins characteristic of the desert. Soledad Peak is about 4000 feet above sea level, and about 1250 feet above the general level of the desert. A number of smaller hills are grouped south of Soledad Mountain. Bowers Hill or Exposed Treasure Butte is about one-quarter of a mile northeast of Soledad Butte and has an elevation of 400 feet above the desert.

Geology: Granite underlies the entire district. There is an exposure on the surface along the northeast flank of Bowers Hill, which extends to the southwest. Rhyolite porphyry lies upon and in contact with the granite, and has by far the greatest exposure of all rocks of the district. Rhyolite occurring in sheets and patches overlies the rhyolite porphyry and forms the summits of several buttes.

The principal veins are on the northern flank of Soledad Mountain, on Bowers Hill, and to the west of Bowers Hill on the desert plain.

The veins that have been worked to any extent on the northern flank of Soledad Butte, occur in the rhyolite-porphyry, and are more or less parallel, their strike being from north to N. 30° W., and dip from 80 degrees to 60 degrees east for a certain depth, where they flatten rather abruptly. The maximum width of the veins is about 12 feet and the minimum width 3 feet. Beginning at the west, the principal and largest veins are the Elephant, Hope, Echo, Gray Eagle, and about one-half mile further east, Queen Esther, Karma and Double Standard veins. All these veins are typical quartz veins, containing quartz and minerals derived from the alteration of the wall rock and deposited in the fissures. The pay ore is more or less irregularly distributed, but it occurs in well defined shoots or lenses, having widths of from 4 to 15 feet, varying in size up to 200 feet along the veins. The gold occurs free, associated with pyrite. The silver occurs as horn silver (cerargyrite), changing to argentite in depth.

On Bowers Hill, there is a series of parallel veins, which have a general north and south strike for a distance, then splitting into numerous branches in a northwesterly direction. These veins dip 60 degrees east for some distance, then flatten rather abruptly to inclinations varying between 30 degrees and 45 degrees, growing flatter with depth, as shown in the lower workings of the Exposed Treasure Mine. Here on the 900-foot level the dip of the vein is only 25 degrees. The wall rock of these veins for a distance is rhyolite-porphyry, and then the veins follow the contact between the granite and rhyolite-porphyry. The vein filling of these lodes is quartz, granite, and calcite, with soft blackish-brown mixture of ferruginous clay and manganese dioxide. The pay ore from 4 to 15 feet in width lies in well defined shoots or lenses, varying in length up to 300 feet. The gold occurs free, associated with pyrite, chalcopyrite, with smaller amounts of galena, marcasite and sphalerite. The silver occurs as horn silver (cerargyrite) and argentite.

The Whitmore and Yellow Dog vein systems are to the west of Bowers Hill on the desert plain. The veins are more or less parallel and strike north to N. 30° W., dipping 45° to 60° E. Widths vary from 3 to 12 feet. These veins occur on the contact of granite and rhyolite-porphyry. The vein filling is similar in character to the Exposed

Treasure vein, consisting of quartz, with massive calcite, and brownish-black ferruginous clay and manganese dioxide.

The approximate production of the district has been over $3,000,000.*

MINES.

Double Standard, owned by *Mojave Mining and Milling Company,* 261 I. W. Hellman Building, Los Angeles; G. E. Benton, president; A. H. Wollacott, secretary; E. B. Wagemann, superintendent. Consists of 40 acres in Sec. 5, T. 10 N., R. 12 W., S. B. M., 3 miles south of Mojave. Elevation 2700 feet.

The vein occurs in rhyolite-porphyry. It strikes northeast, dips 40° W. and has a width of 3 to 5 feet. The major values are in silver. Workings consist of a shaft 200 feet deep, with levels at 100 and 200 feet. On 100-foot level, a drift 650 feet; on 200-foot level, a drift 850 feet.

Mine equipment consists of hoist, cars, tools, and dwellings. Reduction equipment consists of 5-stamp mill.

In 1919, 55,100 pounds of ore were shipped to the smelter; assay value, gold .87 ozs., silver, 13.30 ozs. Idle.

Echo Group of Mines (*Gray Eagle*), consists of the following claims: Soledad, Soledad Extension, Echo, Gypsy, Gray Eagle, Gray Eagle Extension, Starlight and Rocky Point, totaling 100 acres, patented, in Sec. 6, T. 10 N., R. 12 W., S. B. M., 4 miles south of Mojave, at an elevation of 3500 feet.

There are three parallel veins on the property, known as the Echo, Starlight and Gray Eagle, which occur in rhyolite-porphyry. The general course of these veins is northwest, and they dip to the northeast. The outcrop of the Echo vein can be traced on the surface for 1800 feet, and throughout its entire length it has a width of 4 feet. The wall rock is silicified rhyolite-porphyry. The gold occurs free, associated with pyrite. The silver occurs as hornsilver (cerargyrite), changing to argentite in depth. The ore shoots in the vein occur in irregular lenses, which have a length of from 100 to 200 feet. The Starlight vein is about 300 feet east of the Echo vein, is parallel to its strike and dips to the northeast. Average width is 3 feet. It is reported that this vein carried a high silver content.

The Gray Eagle vein commences near the northern end of the Starlight vein, diverging from it in a southerly direction, but finally runs parallel to it. The dip is almost vertical and average width about 3 feet. Underground workings: At an elevation of 3200 feet, No. 1 Echo tunnel is driven N. 25° W. 240 feet to the vein, with drifts northwest and southeast on the vein for approximately 500 feet. At an elevation of 3400 feet, No. 2 Echo tunnel is driven southwest on Echo vein for a distance of approximately 500 feet. The ore is stoped to the surface for a length of 240 feet. The vein in these workings shows a width of 4 to 7 feet, the vein material consisting of quartz and silicified rhyolite, stained with iron oxide. At an elevation of 3450 feet, the Gray Eagle tunnel is driven southeast about 450 feet on the Starlight vein,

*Have made use of Chas. E. W. Bateson's report on the Mojave Mining District, in Trans. A. I. M. E., Vol. 37, pp. 160–177, especially in regard vein systems on properties that are idle and workings caved.

then crosscut 40 feet northeast to the Gray Eagle vein, which is drifted on approximately 400 feet, and from this level a shaft has been sunk to a depth of 350 feet, with levels at 100, 200 and 300 feet. On 100-foot level, drifts on vein 510 feet; on 200-foot level, 650 feet; on 300-foot level, 1040 feet. It is reported that a pay shoot 240 feet long was developed on the Gray Eagle vein, the width being from 4 to 15 feet. These veins have been stoped to the surface above the tunnel levels, and also stoped to a depth of 300 feet on the ore shoot. The property was formerly operated by the Echo Consolidated Mining Company, the ore being treated in a 10-stamp mill, which plant was dismantled in 1906. Reported to have a production record of $200,000. Owners, A. Asher and Bert Fisher of Mojave.

Elephant Group of Mines consists of the following claims: Mountain View, Excelsior, Elephant, Hope, Extension, Elk and Charity, approximately 100 acres, located in Sec. 6, T. 10 N., R. 12 W., about 5 miles south of Mojave, at an elevation of 3000 feet.

Owned by *United Mines Company;* Ward Perry, president; H. F. Benecke, vice president; Mr. McClellen, secretary, Chicago, Ill. Under lease to H. F. Benecke, H. F. Hickman, and M. L. Oliver of 160 Santa Fe Ave., Los Angeles.

Three roughly parallel veins, known as the Hope, Excelsior, and Elephant, have been developed on the property. They have a general northwest strike, with dips varying from 50 degrees to 80 degrees to the northeast. These veins occur in silicified rhyolite-porphyry. The vein material is highly brecciated, containg quartz and included silicified porphyry, which is stained with iron oxide. The veins vary in width from 3 to 7 feet. Workings on the Elephant vein consist of a shaft 120 feet deep, sunk on incline of 75 degrees, with levels at 50 and 100 feet. On 50-foot level, drift southeast 60 feet. On 100-foot level, drift southeast 350 feet, and drift to northwest 210 feet. On the 100-foot level, in drift to southwest, the vein has been stoped to the surface for a distance of 120 feet. It is reported that ore from these workings had a value of $25 to $200 per ton.

The development at present is confined to the Excelsior vein, on the northwest slope of Soledad Mountains, at a distance of 1800 feet west of the Elephant shaft. The ore is trammed from Excelsior tunnel to the mill below Elephant shaft. The Excelsior vein is developed by a crosscut tunnel driven N. 30° E. 100 feet. At 20 feet from the portal it cut the vein which is drifted on northwest 100 feet.

North of these workings, a number of shafts have been sunk on the vein to depths of 50 to 100 feet. The vein is 3 feet wide. About 200 feet southeast of Excelsior tunnel, the Hope vein is developed by two tunnels, the lower tunnel is driven on the vein to the north 400 feet. At 160 feet from the portal it cut an ore shoot about 100 feet in length, which has been stoped to the surface. The vein has an average width of 3 feet. Mine equipment consists of 25-horsepower electric hoist and Rix compressor. Mill consists of 25-ton Herman ball mill, driven by 25-horsepower motor, and amalgamating plates. Ore being milled comes from the Excelsior tunnel. Three men are employed. M. L. Oliver, superintendent.

Exposed Treasure and Desert Queen Mines, the largest producer in the district, consists of the following claims: Last Chance, Black Tiger, Revenue, Exposed Treasure, Extension, Gulch Extension, Accident Gulch, Wedge, Outlook, Yellow Rover, Golden Carrier, Boston, Boston Extension, Desert Queen, Hobson and Camp Bird, located in Sec. 32, T. 11 N., R. 12 W., about 3½ miles south of Mojave on Bowers Hill. Holdings comprise 280 acres of patented ground, and 60 acres held by location, owned by the *Standard Mining and Milling Company,* Grosse Building, Los Angeles; W. E. Goodyear, president; James Westerfeldt, secretary; W. H. Thorpe, general manager. The property was acquired in 1921 by the present owners from the *Mojave Consolidated Gold Mines Company,* who operated the property until 1915. Seven parallel veins have been developed on the property known as the Mill, Assay Office, Golden Carrier, Yellow Rover, Boston, Exposed Treasure, and Desert Queen. The most productive have been the Exposed Treasure, Desert Queen and Yellow Rover veins. The most extensive development work has been confined to the Exposed Treasure and Desert Queen veins. These veins have a general north and south strike, but split into numerous branches which strike N. 30° W. The veins near the surface have a dip of 60 degrees for a certain distance, then flatten to inclinations varying from 30 degrees and 35 degrees, growing flatter with depth, as the Exposed Treasure vein on the 900-foot level has a dip of only 25 degrees to the northeast. The veins have widths varying from 4 to 15 feet. Workings consist of shafts on the different veins. On the Exposed Treasure vein an incline shaft has been sunk to a depth of 900 feet with levels at intervals of 100 feet, with over 10,000 feet of drifts and stopes. The Exposed Treasure shoots of ore trend to the north. The vein has been stoped from the 600-foot level to the surface, the pay shoots being from 100 to 600 feet in length, with widths varying from 4 to 15 feet. On the 900-foot level, a shoot of ore has been developed, 7 feet wide, which shows some very high grade ore, carrying free gold. There is a probability of developing a considerable tonnage of ore from the 900-foot level to the 600-foot level, that will average about $10 to $12 per ton.

On the Yellow Rover vein an incline shaft has been sunk to a depth of 340 feet, with levels at 100, 200, and 300 feet.

This vein is from 4 to 15 feet wide, and is said to have produced some high grade ore.

On the Desert Queen vein, a shaft has been sunk to a depth of 400 feet on a 70 degree incline, with levels at 100, 200, 300 and 380 feet. At the 100-foot level, the vein flattened; on the 200-foot level, it was cut 20 feet east of the shaft; on the 300-foot level, 100 feet east of the shaft; on the 400-foot level, 180 feet east of the shaft. The vein has an average width of 3 feet, with granite footwall and rhyolite-porphyry hanging wall. The present development work has been confined to the Desert Queen shaft, where electric pumps were installed, and the mine unwatered. At a depth of 380 feet in the Desert Queen shaft, a crosscut has been driven west 800 feet, cutting the Boston vein at 100 feet, Yellow Rover vein at 510 feet, Golden Carrier vein at 590 feet, Assay Office at 630 feet and Mill vein at 800 feet from the shaft. It is expected that the Exposed Treasure vein will be crosscut between 800

and 900 feet, at a depth of 135 feet below the 900-foot level of Exposed Treasure Mine. The present crosscut has drained the Exposed Treasure workings, and when the Exposed Treasure vein is cut, it is proposed to raise on the vein connecting with the 900-foot level north of the shaft. The Mojave Consolidated Mines Company was compelled to suspend operations on the property in 1915, due to the large amount of water encountered on the lower levels of the Exposed Treasure Mine, as with the steam equipment then on the property, they could not handle the water.

The installation of an electric power line, which crosses the district, by the Southern California Edison Company, has enabled the present company to install electric pumps which will enable them to handle the water, and develop the ore shoot discovered on the 900-foot level.

Mine equipment consists of 30-horsepower electric hoist ($10\frac{1}{4}'' \times 10''$), Ingersoll Rand compressor ($16\frac{1}{4}'' \times 10''$), air drills, five Byron-Jackson pumps driven by electric motors, machine shops, assay office and dwellings. Reduction equipment consists of two Blake crushers, 60-ton cyanide plant (nine sand vats, and three slime agitators). The original 20-stamp mill has been dismantled and sold. Water is secured from the Tehachapi Mountains, a distance of 18 miles, through the Soledad pipe line, which is owned by the company. It is stated that in previous operations the ore milled averaged $12 to $15 per ton, but the recovery was low.

Fifteen men are employed. Production record to date is about $2,000,000.

Bibliography: Transactions Am. Inst. Min. Engineers, Vol. XXXVIII, pp. 310–319; Report XIV, State Mineralogist, pp. 504–505.

Karma Mine, owned by E. L. Wegmann of Mojave, comprises the following claims: Karma, Ajax, Intension, Junction, totaling 70 acres, located in Sec. 6, T. 10 N., R. 12 W., about 4 miles south of Mojave, at an elevation of 3200 feet. Two parallel veins have been developed on the property. The outcrops can be traced on the surface for a distance of 1000 feet. They vary in width from 4 to 15 feet. The general course of the veins is north, dip 60 degrees east, with silicified rhyolite-porphyry walls. The vein is sugary quartz, stained with iron oxide. It is reported the pay-shoot was 240 feet in length, and 15 feet wide. A high grade streak of ore occurs along the hanging wall. The gold is free with a small percentage of pyrite. Workings consist of a tunnel 1800 feet long on the vein, shaft 160 feet deep, drifts and stopes.

Mine equipment consists of cars, assay office, shops and dwellings. Reduction equipment: Old 20-stamp mill, 850-lb. stamps.

Water is secured from the Soledad pipe line, owned by the Standard Mining and Milling Company.

Property was worked by Karma Mining Company, from 1898 to 1904. Purchased by E. L. Wegmann, in 1918. Since that date, the property has been under development, and it is reported a large tonnage of ore has been developed. Idle.

Bibliography: Report XIV, State Mineralogist, p. 499.

Queen Esther Mine is one of the large producers of the district, which was operated from 1894 to August, 1910, when operations were suspended. The property has been idle since that date. The production in gold is reported to have been about $200,000.

Holdings consist of the following claims: Regina, Mojave Bonanza, Tip Top, Independent, Calcium, Queen Esther, Rex, Regent, McBrayer, Sailor Boy, totaling 160 acres, located in Sec. 6, T. 10 N., R. 12 W., 4 miles south of Mojave, at an elevation of 3200 feet.

Owners, *Queen Esther Mining and Milling Company*, Pacific Mutual Building, Los Angeles. Seeley W. Mudd, president; A. A. Barnard, secretary.

The Queen Esther vein runs nearly north and south. It dips 40 degrees to the east. The vein has a width of 4 to 8 feet, and at places attains a maximum width of 12 feet. The vein rolls or folds as it gains in depth. These folds dip along the vein about 10 degrees to the north. The vein is filled with brownish colored quartz. The country rock is silicified rhyolite-porphyry. Underground workings consist of several tunnels on the vein, 500 feet in length, with several thousand feet of drifts. Some of the ore contained considerable silver. The pay-shoot worked is reported to have been 500 feet in length, with an average width of 8 feet. Mill was dismantled in 1918.

Bibliography: Report XIV, State Mineralogist, p. 508.

Gold Coin Group, consists of the following claims: Gold Coin, Gold Coin No. 1, and Victor No. 1, located in Secs. 31 and 32, T. 11 N., R. 12 W., 3 miles south of Mojave. Owners, *New Tonopah Dividend Mining Company*, Tonopah, Nevada. J. R. Cunningham, president; E. P. Cullinan, secretary and manager.

The property is located west of the Yellow Dog Mine on the flat, at an elevation of 2700 feet. The company is sinking a prospect shaft in granite wash with the hope of developing a parallel vein to the Yellow Dog vein. The present depth of the shaft is 180 feet, and it is still in granite wash.

Four men are employed.

Whitmore Mine consists of 10 claims known as: Whitmore No. 1, No. 2, No. 3, No. 4, No. 5, No. 6, No. 7, Whitmore Extension, Antique, Antique Extension, and Valley, approximately 160 acres, located in Sec. 32, T. 11 N., R. 12 W., at an elevation of 2700 feet, 3½ miles south of Mojave. This group of claims lie between the Exposed Treasure and Yellow Dog mines.

Owners, W. K. Whitmore and J. E. Whitmore of Mojave. The principal development work has been confined to Whitmore No. 1, No. 2, No. 3, and No. 7 claims.

The property was operated in 1912 by the *St. Mary Mining Company* of Arizona. It was later acquired by the present owners.

Four parallel veins occur along a series of roughly parallel rhyolite-porphyry flow dikes. The general course of these porphyry dikes is N. 30° W. and dips 60 degrees east. The veins strike north, to N. 30° W. and dip 60 degrees east. Their widths vary from 2 to 6 feet. On Whitmore No. 1 claim, a shaft has been sunk on the most westernly vein to a depth of 300 feet, on an incline of 75 degrees, with levels at

100 and 200 feet. On the 100-foot level, the vein has been drifted on north 165 feet, and south 60 feet. On the 200-foot level, north 160 feet, and south 120 feet. This shaft was sunk on the vein for a distance of 225 feet, then vertical for 75 feet, in the footwall. At the 270-foot depth a crosscut was run 70 feet east to the vein. The vein has rhyolite-porphyry footwall and granite hanging wall. The vein developed on these two levels has an average width of 3 feet, and is reported to carry values in gold and silver of from $6 to $50 per ton. Whitmore No. 3 shaft is 400 feet southeast of No. 2 shaft and is an incline shaft 100 feet deep. The vein developed is from 2 to 4 feet in width, and reported to have a value of $20 per ton in gold. The ore is free milling, containing some pyrite.

Equipment consists of 6-horsepower Fairbanks-Morse gas engine hoist, compressor, 10″ x 10″, driven by 32-horsepower Fairbanks gas engine, shops and dwellings. Two men are employed on development work.

Yellow Dog Mine consists of the following claims: Yellow Dog No. 1, No. 2, No. 3, No. 4, No. 5, No. 6, Francis H. and Francis H. No. 1, totaling approximately 160 acres, located in Secs. 29, 32, T. 11 N., R. 12 W., 3 miles south of Mojave. Owners, Yellow Dog Mining Company. L. L. Patrick, president; Walter B. Kibby, secretary; Sol Camp, superintendent. Offices, 803 H. W. Hellman Building, Los Angeles.

During the early part of 1922, Mr. Percy Wegmann of Mojave discovered an outcrop of quartz carrying free gold on this group of claims. The above-mentioned claims were located by P. Wegmann, J. Withers, and Bert Fisher of Mojave, and were afterwards acquired by the present company. This discovery of high grade gold ore is the most important made in the district in recent years, and has caused a revival of interest in the opening and development of other properties in the district. The vein strikes north and dips about 60 degrees to the east. Has an average width of 10 feet, and a maximum width of 15 feet. The high grade gold quartz occurs on the hanging wall, with a vein of spar from 6 to 8 feet wide heavily stained with manganese on the footwall. The vein occurs on the eastern slope of a small butte of rhyolite-porphyry, and has a rhyolite-porphyry footwall with granite hanging wall. It is reported that samples taken from the spar vein will average $3 per ton, while the average value of samples from 4 feet of vein quartz was better than $25 per ton in gold.

Developments: At an elevation of 2800 feet, a shaft has been sunk on an incline of 60 degrees to a depth of 275 feet, with levels at 100 and 200 feet. On the 100-foot level, the vein has been drifted on 272 feet north and 100 feet south. On this level, an ore shoot was cut 150 feet north of the shaft, which is developed for a distance of 120 feet, the vein having an average width of 12 feet. It is said to average $25 per ton. On the 200-foot level there is a drift north 150 feet, and south 200 feet. Besides this shaft, a number of shallow shafts have been sunk to depths of 60 feet along the vein, both north and south of the main shaft. South of the shaft the vein is faulted about 20 feet to the west by a fault which strikes N. 60° W.

Equipment consists of 15-horsepower electric hoist, Chicago pneumatic compressor (10″ x 12″) driven by 50-horsepower motor. Water

is secured from the Soledad pipe line, owned by the Standard Mining and Milling Company. Electric power is secured from the Southern California Edison Company. Eight men are employed.

Yellow Dog Extension Mine comprises five claims, known as: Liberty, Victory, Bull Moose, Bull Moose No. 1 and No. 2, Bull Moose Fraction, totaling 100 acres, located in Sec. 33, T. 11 N., R. 12 W., 3 miles south of Mojave. Elevation 2800 feet. Owners, Yellow Dog Extension Mining Company, 308 H. W. Hellman Building, Los Angeles. E. M. Brown, president; Luther Emery, secretary; C. L. Putnam, manager.

The company also has under lease from the Standard Mining Company a section of ground 600 feet by 447 feet. The property is located on the east slope of Bowers Hill, to the east of the Standard Mining and Milling Company property.

Two parallel veins have been developed on the property, the most prominent being the Russian Boy vein. These veins strike N. 30° W., and dip 45 degrees east. The company is sinking a 2-compartment vertical shaft to a depth of 200 feet, also driving a cross-cut on the 100-foot level to develop the Russian Boy vein. This vein is expected to be cut by the shaft at a vertical depth of 200 feet. At an elevation of 2850 feet, a tunnel has been driven on the Russian Boy vein N. 35° W., 150 feet. The vein has a width of 6 feet. A shoot of ore was developed about 75 feet in length, with an average width of 6 feet, which has been stoped to the surface throughout its length. The country rock is granite and rhyolite-porphyry. The vein filling is quartz and calcite stained with manganese and iron oxide. Quartz shows free gold associated with pyrite.

Equipment: 7-horsepower gas engine hoist, truck, shops and buildings. Five men are employed.

Los Angeles County.

Chicago-Pacific Clay Deposit. This deposit is located in the range of hills north and south of Soledad Canyon, in Secs. 8, 9, 15, 16, and 17, T. 4 N., R. 14 W., M. D. M., 11 miles east of Saugus, and one-quarter of a mile north of Lang Station, on the Southern Pacific Railroad.

Holdings consist of 13 claims, 7 in the Pacific group and 6 in the Chicago group.

It is a massive deposit of white metamorphic granite (quartz-feldspar rock) containing high aluminum content, which, according to the analysis, should probably be satisfactory for the manufacture of fire brick and certain kinds of pottery. The low iron content of the rock suggests its use for high grade Portland cement, and it also might be used as a paint filler.

The general strike of the formation is east, and it can be followed from Lang to Alpine Siding on the Southern Pacific Railroad, a distance of two miles. It is about two miles in width and occurs on a contact with schist, which lies to the south of the granitic rock.

The following is an analysis of the material made by the C. W. Hill Company of Los Angeles:

Moisture	0.10%
Loss in ignition	0.55%
Silica	58.10%
Alumina	28.27%
Ferric oxide	1.03%
Lime	8.60%
Magnesia	0.54%
Potash	1.60%
Soda	0.82%
Total	99.61%

Owners, J. P. Monahan and J. G. Kronn, 322 Homer Laughlin Building, Los Angeles.

Ramelli Dolomite Deposit. The deposit is located on the west slope of the San Gabriel Mountains, in Sec. 17, T. 3 N., R. 15 W., M. D. M., 4 miles northeast of San Fernando. Elevation 2200 feet. Holdings consist of two claims, 40 acres.

A stratum of white crystalline dolomite occurs in the granite, with a general easterly and westerly course, and dip 45 degrees to the north. The exposure is from 200 to 500 feet in width and it can be traced for the full length of the two claims.

Owners, Frank Ramelli and Edward Oviatt of Van Nuys.

Orange County.

Silverado Mine. It is situated in Silverado Canyon, 20 miles east of Santa Ana. The property was formerly owned by the *Blue Light Mining Company* of Los Angeles, and has been recently acquired by a group of Orange County men, with Stanley Chapman of Fullerton as the largest stockholder.

The officers of the new company are as follows: Charles Eygabroad, president; Stanley Chapman, vice president; Sam Collins, secretary, and O. H. Pember, superintendent.

The present company plans to enlarge the 50-ton flotation plant. Thirty men are employed on development work.

The ore is silver-bearing galena, associated with zinc-blende and pyrite, and the vein is from 2 to 4 feet wide.

Bibliography: State Mineralogist's Report XVII, p. 323.

San Bernardino County.

RANDSBURG DISTRICT.

The silver-bearing region of this district continues quite active, although a number of the smaller companies have suspended operations, due to the completion of the Pittman Act and the present price of 62 cents for silver. There are still a number of companies vigorously prosecuting development work on their holdings.

There has been a noticeable revival of interest in the gold mines of the district, and active development work has been started on a number

of properties that have long lain dormant; the outstanding features being the discovery of high grade gold ore on the Silver Basin group, and the development of a new shoot of ore on the Black Hawk, west of the Blue fault, on the 100-foot level of the Black Hawk Mine. The shoot is 65 feet long, with an average width of 3 feet. It is reported to have an average value of $50 per ton in gold. The find is important as it opens up new territory on the property, as nearly all previous production came from east of the Blue fault.

MINES.

Big Gold Mine consists of the following claims: North Star, Lucky Strike, Neglected, Kenneth B. Fraction, totaling 74 acres, located in Secs. 3 and 4, T. 30 S., R. 40 E., 3 miles southwest of Randsburg. Elevation 3800 to 4000 feet. Owner, E. Spillane of Randsburg, under option to Big Gold Mines, Inc. W. Roland, president; Guy Jones, secretary; S. L. Pearce, manager. The property is located on the northwest slope of the Rand Mountains, and adjoins the Minehaha Mine on the west.

The country rock is granite and schist. A series of parallel north and south quartz veins occur in the schist, and there is also an east and west system of veins that intersect the north and south veins.

The principal development work has been confined to the Big Gold vein, which occurs on a fault fracture, on the contact of granite and schist. This vein has a course of N. 20° W. and dip of 40 degrees east. Its average width is 4 feet. The quartz carries free gold, and a small percentage of pyrite. The croppings of the vein are prominent and can be traced for a distance of 3000 feet.

Mine workings consist of a 2-compartment vertical shaft 385 feet deep. The shaft intersected the vein on the 155-foot level, and the vein has been drifted on 200 feet south, and 30 feet north on this level. Above the 155-foot level the vein has a granite hanging wall and schist footwall, and below this level the hanging wall is rhyolite-porphyry, with schist on the footwall. A rhyolite-porphyry dike 25 to 50 feet in width was cut in the shaft on the 155-foot level, which strikes N. 20° W. and dips 40 degrees east, forming one wall of the vein. A winze has been sunk on the vein from the 155-foot level to a depth of 105 feet. South of the shaft, the different veins have been developed by a number of tunnels from 50 to 100 feet in length.

Mine equipment: Consists of 6-horsepower Fairbanks-Morse gas engine hoist, 2-drill compressor, air drills, and blacksmith shop. Six men are employed.

Black Hawk Mine (gold and silver) consists of the following claims: Lassen, Shasta, One-Track, Gray Eagle, Two-Track, O. K. No. 1 and No. 2, Black Hawk and Wedge, totaling 130 acres. Property was discovered in 1896, and operated by D. A. B. Blue until 1921, when it was purchased by the *Pittsburg Mount Shasta Mining and Milling Company*, J. J. Schneider, president; T. V. Scott, secretary, and D. F. McCormick, manager. J. O. Grenan is superintendent. Offices, 516 Federal Building, Pittsburg, Pennsylvania.

The present company started operations February 21, 1923, and the property has been under continuous development to date.

The 5-stamp mill on the Black Hawk Mine has been remodeled, and has been operating continuously on ore from the mine. On the Shasta Claim, at an elevation of 3570 feet, the company is sinking a 2-compartment vertical shaft, its present depth being 700 feet. This shaft is located 2500 feet south of the California Rand Silver Mining Company's main shaft, and 1000 feet south of the Bray-Bisbee shaft on the Rand Silver King group.

The shaft was sunk 140 feet through Lake Bed formation to schist, and in the schist it cut a number of N. 30° E. fissures which dip 60 to 65 degrees northeast. These fissures are filled with quartz and calcite, mineralized with pyrite, and some stibnite.

In the Black Hawk Mine a new shoot of ore west of the Blue fault has been developed on the 100-foot level. The shoot is 65 feet in length, with an average width of 3 feet, and is said to average $50 per ton in gold.

Three parallel quartz veins occur in the schist, with general north strike and dip 50 degrees to the east. Width of veins 18 inches to 3 feet. Free milling gold quartz; value $7 to $50 per ton.

Developments: Black Hawk shaft 250 feet, with levels at 50 feet, 100 feet, 200 feet and 4000 feet of drifts and crosscuts on the Black Hawk vein. Pittsburg shaft 700 feet vertical. Bevis Divide shaft, 160 feet.

Electric power is secured from the Southern Sierras Power Company.

Mine equipment: At the Black Hawk shaft, 20-horsepower direct connected electric hoist. At the Pittsburg shaft, 50-horsepower electric hoist, and 12″ x 10″ compressor. At the Bevis Divide shaft, 25-horsepower electric hoist.

Mill equipment: 5 stamps, weight 1000 pounds. The ore is crushed through 40-mesh, followed by amalgamation. Fifteen men are employed.

Bibliography: Report XIV, State Mineralogist, p. 489.

California Rand Silver, Inc. Alfred Harrell, president; Charles S. Meroney, general manager; controls 21 claims, with a total area of 240 acres in the Rand Mining District. The property has been a steady producer since its discovery in April, 1919.

The capacity of the mill has been lately increased from 150 tons to 200 tons per day. During the month of May, the mine produced 7800 tons of milling ore, and 1034 tons of ore were shipped to the smelter. The mill produced 680 tons of concentrates, with an average value of $288.83 per ton. The total smelter returns for the month were $283,-298.51. The regular monthly dividend of 10 cents per share, a total of $153,600, has been distributed to the stockholders of the company. Since the property has been in operation, it has paid in dividends $2,553,600.

Mizpah-Montana Mine consists of the following claims: Mizpah Extension and Montana-Fraction, approximately 20 acres located in Secs. 1 and 6, T. 30 S., R. 40 and 41 E., 1½ miles southeast of Randsburg. Elevation 3800 feet.

Owners, Mizpah-Montana Mining Company, Hopkins Building, Bakersfield. Herman T. Miller, president; Frank Smith, secretary; G. Cleveland Taylor, superintendent.

The country rock is granite and schist. Two parallel veins, which strike N. 60° and dip 60 degrees southeast, occur in the granite on the

Mizpah Extension claim. Width of veins is from 8 to 12 inches. A 2-compartment shaft has been sunk to a vertical depth of 700 feet. The shaft is in granite for a distance of 400 feet, at which point it cut the schist.

Levels were driven at 102, 166, 236, 493 feet. On 100-foot level there is a drift north 80 feet, and south 80 feet; on the 200-foot level, a drift southeast 80 feet; on the 500-foot level, a drift west 260 feet, and east 100 feet. On the 100-foot level the drift cut a north and south fracture in the granite, which showed some ruby silver. On the 500-foot level in the east drift a well-defined fracture was cut which strikes N. 40° E. and dips 60 degrees east. The vein material in this fracture is brecciated and mineralized with pyrite and stibnite. Width of mineralized schist is from 4 to 8 feet. The company has an option on the Cuve claim, and it is proposed to develop this property from the 700-foot level.

Mine equipment consists of 50-horsepower electric hoist, 12″ x 10″ Ingersoll-Rand compressor, driven by 50-horsepower motor, air drills, cars and blacksmith shop. Eight men are employed.

Mizpah-Nevada Mine consists of New, Spider, Fraction, and Mistake claims, located in Secs. 1 and 6, T. 30 S., R. 40 and 41 E., 1½ miles southeast of Randsburg. Elevation 3850 feet. Owners, Mizpah-Nevada Mining Company, 314 Hopkins Building, Bakersfield. M. F. Pearson, president; F. J. Burns, secretary; G. Cleveland Taylor, manager.

Three parallel quartz veins occur in the granite. They strike N. 60° E., and dip from 75 degrees to vertical. Widths are 6 to 12 inches. Development consists of vertical 2-compartment shaft 150 feet deep and crosscutting on the 150-foot level to develop veins exposed on the surface east of the shaft. The company is planning to sink the shaft an additional 150 feet to cut the schist.

Mine equipment consists of 6-horsepower Fairbanks-Morse gas engine hoist, air drills, cars and blacksmith shop. Air is secured from the Silver Moon Mining Company. Four men are employed.

Rand Contact Mine comprises the following claims: Inyo, Body, American and Limestone, approximately 80 acres, located in Secs. 7, 12, 13 and 18, T. 30 S., R. 40 and 41 E., 3 miles southwest of Johannesburg. A quartz vein occurs on the contact of the schist and granite, striking northeast and southwest and dipping 45 degrees to southeast. Width is 12 inches to 2 feet. Development consists of 2-compartment vertical shaft sunk to a depth of 100 feet. A crosscut is being driven on the 100-foot level to the southeast to intersect the contact. Two parallel faults occur north and south of the shaft, which strike N. 45° W. and dip 70 degrees northeast, intersecting the contact to the southeast of the shaft.

Equipment consists of 10-horsepower Fairbanks-Morse gas-engine hoist, cars and blacksmith shop.

Owners, Rand Contact Mining Company, 506 S. Hill Street, Los Angeles. S. G. Dixon, president; L. A. Shaftner, secretary; Dr. M. A. Varichey, vice president; E. G. Dixon, manager. Four men are employed.

Silver Basin Mine (Gold). Formerly known as *Golden Era* group, consisting of the following claims: Golden Era, Hidden Treasure, Ransome, O'Farrell, Fraction, Mandan Fraction, Y. W. Fraction; 60 acres, located in Sec. 7, T. 30 S., R. 41 E., 2½ miles southeast of Randsburg. Elevation 3600 feet.

Owners, Silver Basin Mining Company, Bakersfield. Kent S. Knowlton, president; Ray Woods, secretary; Leonard Lohr, manager.

Two parallel quartz veins occur in the schist, striking northwest and dipping 70 degrees northeast. Width is 12 inches to 3 feet.

The quartz is stained with iron oxide, and shows free gold.

Developments: Hidden Treasure shaft, 240 feet; Golden Era shaft, 50 feet. Present work is confined to the Golden Era vein. Here the vein prospects well in gold, and samples taken from shafts sunk along the vein for a distance of 100 feet, are said to have given values of from $50 to $150 per ton in gold. The company recently purchased the equipment of the Ben Hur Company, and are planning to sink the present Golden Era shaft to a greater depth. Six men are employed.

Silver Belle Mine comprises the following claims: Silver Belle and Silver Belle No. 1, approximately 20 acres, located in Sec. 6, T. 30 S., R. 41 E., 2 miles southeast of Randsburg. Elevation 3800 feet.

Owners, Silver Belle Mining Company. Edward Burge, president; N. R. Solomon, secretary; C. E. Pearce, superintendent. Property was under continuous development during 1921 and 1922 but operations were suspended in July, 1923. Development consists of 2-compartment vertical shaft 700 feet deep, with two levels, one at 500 feet, and the other at 700 feet. Crosscuts were driven 400 feet west on the 500-foot level, and 300 feet east on the 700-foot level. This shaft was sunk northwest of the Big Dike fault, in hopes of developing ore which occurs on the north and south, and N. 40° E. fractures of the California Rand Silver Mining Company's property. On the 500-foot level a series of north and south fractures were cut in the schist, which were mineralized with pyrite and stibnite with small values in gold and silver.

It is reported that the company plans to resume operations at an early date and is planning to sink the present shaft to a depth of 1000 feet.

Silver Glance comprises 10 acres on the *Silver King* group of claims, under lease to the Silver Glance, Inc., of Bakersfield. E. J. Emmons, president; S. L. Pearce, secretary and manager.

The property is located southeast of Osdick on the western slope of Red Mountain. Development consists of 2-compartment vertical shaft, 250 feet deep. The company plans to sink this shaft to a depth of 700 feet, which is the probable distance that the shaft will have to be sunk through the Lake Beds formation to cut the schist.

The shaft is located about 1000 feet northeast of the Silver King shaft in which some high grade silver ore was developed.

Equipment consists of 6-horsepower gas engine hoist. Six men are employed.

South Rand (Gold) comprises the Igo claim and 80 acres of patented land, located in Sec. 16, T. 30 S., R. 40 E., 6 miles south of Randsburg, on the southeast slope of Rand Mountains. Elevation 4200 feet.

Owners, South Rand Mining Company. E. L. Burton, president; S. L. Pearce, secretary and manager.

Two parallel quartz veins occur in schist. They strike east and dip 45 to 60 degrees south. Widths are 12 inches to 2 feet.

Development consists of shaft 60 feet deep, and tunnel 50 feet in length, with winze 30 feet deep on the vein. The company is sinking a shaft on one of the veins, and proposes to sink to a depth of 300 feet before drifting on the vein.

Equipment consists of 12-horsepower gas-engine hoist, blacksmith shop and cars. Three men are employed.

St. Lawrence Rand Mine comprises 180 acres, located in Sec. 1, T. 30 S., R. 40 E., 2 miles southeast of Randsburg. Elevation 3680 feet.

Owners, *California Rand Silver, Inc.*, under lease to the St. Lawrence Rand Mining Company, Land Building, Bakersfield; M. A. Dulgar, president; E. H. Richards, secretary.

Two parallel quartz veins occur in the schist. They strike N. 70° E. and dip 65 degrees south. Widths are 12 inches to 4 feet. The vein filling is quartz, calcite, and mineralized schist; the minerals contained being pyrargyrite, stephanite, cerargyrite, stibnite and pyrite, with some gold values. Two shafts have been sunk on the K. C. N. vein; No. 1 shaft being 275 feet deep on an inclination of 67 degrees. No. 2 shaft is an incline shaft 300 feet deep. The present development work is confined to No. 1 shaft. Levels have been driven at 100 feet, 200 feet and 240 feet. On the 200-foot level there is a drift 250 feet east, and 40 feet west; on the 240-foot level, a drift 250 feet east, connecting with No. 2 shaft. On the 240-foot level about 230 feet east of the shaft a shoot of ore has been developed 40 feet in length with average width of 4 feet. A winze has been sunk on this shoot to a depth of 50 feet. Smelter returns from 6000 pounds of ore from this ore body were $75 per ton in gold and silver. Samples taken from the vein are said to have an average content of 20 ounces in silver with $5 in gold.

Mine equipment consists of 35-horsepower electric hoist, 12″ x 10″ Ingersoll-Rand compressor driven by 75-horsepower motor, blacksmith shop, air drills and cars. Ten men are employed.

Treasure Hill Mine comprises one claim known as Treasure Hill, located in Sec. 1, T. 30 S., R. 40 E., 1½ miles southeast of Randsburg. Elevation 3750 feet.

Owners, Treasure Hill Mining Company, Bakersfield. Frederic Downer, president; George Rutherford, secretary; C. E. Lucas, manager.

Two quartz veins occur in the schist; one strikes N. 30° E. and the other N. 55° E., and dip 60 degrees southeast. Widths are 12 inches to 2 feet. The company is sinking a vertical 2-compartment shaft, present depth 485 feet, and is planning to sink to a depth of 600 feet before starting a level. It is reported that at a depth of 400 feet a mineralized vein 6 feet in width was cut which strikes N. 40° E. Samples taken from the vein showed $3 to $5 in gold. At a depth of 480 feet the shaft cut a north and south fracture, which was filled with quartz and calcite and mineralized with pyrite. Samples taken are reported to assay from $5 to $20 in gold.

Mine equipment: 20-horsepower gas-engine hoist, blasksmith shop, air drills, and cars. Air is secured from Silver Moon Mining Company. Eight men are employed.

United Mines, Inc. (Gold) has a bond and lease on the *Bully Boy* group of claims, totaling 110 acres, located in Secs. 11 and 12, T. 30 S., R. 40 E., 2 miles south of Randsburg. Elevation 4150 feet. Operating company is known as United Mines, Inc.; C. R. Hannaman, president; M. J. McVan, secretary; S. L. Pearce, manager.

During the year 1922, the property was operated by the *Nugget Gold Mining Company*, but it was acquired by the present company in July, 1923. A series of parallel narrow quartz veins occur in the schist. Strike is N. 40° E. and dip 50 degrees northeast. Widths are 6 to 12 inches. A number of shafts have been sunk on the different veins from 50 to 100 feet. The main working shaft has been sunk on an incline of 53 degrees to a depth of 100 feet, on the Bully Boy vein. On the 50-foot level there is a drift west 150 feet on the vein; on the 100-foot level, a drift west 50 feet. About 150 feet west of this shaft there is an incline shaft on the vein to a depth of 60 feet, and about 250 feet west of this shaft is another shaft 170 feet deep. The area between these two shafts has been stoped to a depth of 60 feet, at which point the ore was cut off by a horizontal fault.

Mine equipment consists of a 60-horsepower West Coast gas-engine hoist, 10″ x 10″ Chicago pneumatic compressor, blacksmith shop and mine dwellings. Four men are employed.

White Horse Mine comprises the following claims: White Horse and High Grade Ridge, totaling 11 acres, located in Sec. 1, T. 30 S., R. 40 E., 2 miles southeast of Randsburg. Elevation 3550 feet.

Owners, White Horse Mining Company, Selma, California. A. Sager, president; C. Campbell, secretary; S. L. Pearce, manager.

Two parallel quartz veins occur in the schist northeast of the shaft. They strike N. 30° E., and N. 55° E. and dip 50 degrees southeast. Widths are 12 inches to 2 feet. Six shafts have been sunk on these two veins to depths of 40 to 50 feet. The company is sinking a 2-compartment vertical shaft, present depth 200 feet, and is planning to sink to a depth of 500 feet, in the hopes of cutting the silver bearing ore zone. The shaft intersected No. 1 vein at a depth of 120 feet, and should cut No. 2 vein at a depth of 400 feet.

Mine equipment consists of 20-horsepower gas-engine hoist. Six men are employed.

FREMONT MINING DISTRICT.

This district is situated 20 miles southeast of Randsburg, in T. 31 and 32 S., R. 42 E., in a range of mountains which run in a northwesterly direction, of which Fremont Peak is 4600 feet above sea level and 1800 feet above the general level of the desert. A number of smaller hills are grouped south and southeast of Fremont Peak, and are included in the district.

In the southern end of the district, the Silver Dome Mine is located on a low range of hills, the highest peak having an elevation of 2831 feet. Fremont Peak and the surrounding low ranges of hills are of

igneous or volcanic origin. Granite underlies the entire district, and rhyolite-porphyry lies upon and in contact with the granite. In the southern portion of the district where the Silver Dome Mine is situated, a belt of limestone occurs south of the granite area, and makes up the crest of the low range of hills.

Fremont Peak Mine is situated on the western slope of Fremont Peak, at an elevation of 3700 feet. Holdings consist of 12 claims, 240 acres, in T. 31 S., R. 41 E., 18 miles southeast of Randsburg. Owner, L. A. Mason, Oakland. Under option to *Monarch Mining Company,* Randsburg; John C. Kellar, president; A. B. Hall, manager.

A series of parallel quartz veins occur in the granite, and also on the contact of the granite and rhyolite-porphyry dikes. The veins have a general east and west course, dip 70 degrees north, widths varying from 12 inches to 2 feet.

Development consists of an incline shaft 100 feet deep, with levels at 50 and 100 feet. On 50-foot level there is a drift west 125 feet, and 100 feet east. In the west drift on the 50-foot level, about 20 feet west of the shaft, the vein is cut by a north and south fault, dipping 60 degrees east. This fault cut off the ore shoot. A pay shoot has been developed 60 feet in length west of the fault. Its average width is 12 inches, and it is said to average from $25 to $50 per ton. One-quarter mile southeast of the shaft, at an elevation of 3800 feet, are two cross-cut tunnels about 50 feet apart; No. 1 Tunnel being 100 feet. No. 2 Tunnel is located 50 feet east of No. 1, is driven 60 feet south to No. 1 vein on a rhyolite dike, then drifted 100 feet east on the vein, and cross-cut 90 feet south to No. 2 vein. The veins occur on both walls of a rhyolite dike. They have a width of 6 to 8 inches, strike east and west, and dip 35 degrees north. Near the crest of the ridge, at an elevation of 4000 feet, a tunnel has been driven 200 feet east on a narrow vein of quartz 4 to 6 inches wide, which dips 35 degrees north.

Equipment: 10-horsepower gas-engine hoist, cars, blacksmith shop and dwellings. Twelve men are employed.

Silver Dome Mine comprises 10 claims along the lode veins, and 160 acres covering the limestone deposit, totaling 360 acres, located in Sec. 32, T. 12 N., R. 42 E., 20 miles southeast of Randsburg.

Owners, Silver Dome Mining Company, Phoenix, Arizona; Capt. A. Rolling, president; F. Knappin, secretary.

Country rock is granite and limestone. Four parallel veins occur in the granite. These veins occur along fault fissures in the granite, which strike east, and dip from 45 degrees to 65 degrees north. The vein filling is quartz, calcite and inclosed wall rock, mineralized with chalcopyrite, pyrite and bornite, with values in gold and silver. Widths vary from 4 to 8 feet.

Developments: A shaft has been sunk on one of these parallel veins on an incline of 45 degrees for 200 feet. Here the vein straightens to 85 degrees, and the shaft follows the vein on its dip for 103 feet. At a depth of 265 feet, a drift is driven on the vein 100 feet east and 50 feet west. The ore developed on this level is reported to carry from 3 to 12 per cent copper, $7 to $20 in gold, and 7 to 15 ozs. of silver.

A number of intrusive diabase dikes occur in the granite, and one of these dikes forms the footwall of the vein on the 265-foot level.

Mine equipment: 25-horsepower Western gas engine hoist, two 9″ x 14″ Chicago pneumatic compressors, a No. 5 Cameron pump, cars, trucks, blacksmith shop and dwellings.

A water supply is secured from springs and from the shaft.

Fifteen men are employed. Capt. A. Rolling, manager.

ORO GRANDE DISTRICT.

Ophir Mine, located six miles northeast of Oro Grande, has been taken over by the *Rentchler Mines Company* of Los Angeles; Harvey G. Wolf, president; C. A. De Coo, secretary.

The property consists of four claims, and is developed by three shafts from 185 to 300 feet in depth. The company is planning to install an electric-driven hoist, and to start development work on the property at an early date.

OIL FIELD DEVELOPMENT OPERATIONS.

By R. E. Collom, State Oil and Gas Supervisor.

Early in April of 1923, petroleum production in California had apparently reached the saturation point. The average daily production for the state had increased from 325,000 barrels daily in April, 1922, to 715,000 barrels daily in 1923. After reaching the 700,000 barrel mark at the beginning of April, 1923, the average daily production, up to the time of this report, June 15, 1923, remained close to 700,000 barrels per day.

This did not signify, however, that the peak of production had been reached. It simply meant that 700,000 barrels per day represented the maximum capacity of California's storage, transportation and marketing system, and therefore producers found it necessary to 'pinch in' flowing wells and otherwise curtail production.

Development operations at Huntington Beach, Long Beach and Santa Fe Springs oil fields being responsible for the overproduction of crude oil in the state, operators in those fields, working in cooperation with marketing companies, started in May, 1923, to restrict the normal flow of wells by 30 per cent in order to keep production down.

The logical means of curtailing production was to stop drilling. However, the complicated interests of lessors, royalty holders, drilling contractors and town-lot operators, seem to have made a concerted effort in this direction impossible. The next best step was to 'pinch in' production of wells already drilled even though drilling and the bringing in of new wells could not be stopped.

Four reductions in the value of the crude product within a year caused no appreciable check in drilling. Over 600 wells were drilling in the three fields on June 10, 1923. These were distributed as follows: Huntington Beach 154, Long Beach 275, and Santa Fe Springs 247. The movement to restrict the output of individual wells will further curtail the profits derivable from each producing unit. The oversupply is being more actively maintained by initial productions of wells just completed than the rapidly declining old wells. Initial production of 12 wells recently completed at Santa Fe Springs averaged 3950 barrels per well as compared with an average daily production of 1600 barrels per well for all producing wells in the field.

Initial productions for wells brought in at Santa Fe Springs during the week ending May 31, 1923, were as follows:

Initial Productions Santa Fe Springs Oil Field.

Company	Well No.	Depth of completion, feet	Date of completion	Initial production in barrels per day
George F. Getty	"Parcell" 8	4700	May 30	6700
Wilshire Oil Co.	"Surbeck" 1	4666	May 24	2250
White Star Oil Syn.	3	4679	May 25	3000
Petroleum Midway Co., Ltd.	"Patterson" 4	4908	May 28	2000
Standard Oil Company	"So. Whittier Com." 9	4765	May 29	500

At Santa Fe Springs oil field 112 wells were producing 235,755 barrels daily on May 24, 1923, prior to the general move to 'pinch in' production. On May 31, 1923, after the 30 per cent curtailment of

production was put into effect, and after the five new wells listed above had come in, the average daily production was 232,158 barrels, an actual net curtailment of 3597 barrels, or 1.6 per cent.

It should be borne in mind—in this town-lot development—that an appreciable amount of drilling has been financed by people not experienced in the oil industry. They have invested in things hoped for rather than seen. Probably such drilling will continue regardless of the profit that can be realized from the product. It is estimated that $58,000,000 has been expended in drilling alone since these fields started. The three fields have produced approximately 107,130,000 barrels from January 1, 1921, to June 1, 1923.

At the beginning of 1921 there were 43 producers of petroleum in Los Angeles and Orange counties. In January, 1923, the number of producers had increased to 175.

There has been no material change in the number of marketing concerns. Five of the large marketing companies of California are confronted with the huge task of taking care of a major portion of the production, providing transportation, storage and refining facilities, for a greater additional quantity of crude oil than these same companies handled throughout the entire plant of the industry at the beginning of 1921.

As of June 1, 1923, the following is the status of operations of the three southern fields which dominate the oil situation in California:

Field	Wells drilling	Wells idle	Wells producing	Average daily production, barrels	Average daily production per wel., barrels	Drilling below 4000 feet
Long Beach	275	64	181	192,693	1,062	----------
Huntington Beach	154	131	168	110,914	656	----------
Santa Fe Springs	247	26	112	232,158	2,070	133
Total	676	221	461	535,765	792.5	133

From March 10, 1923, to and including April 7, 1923, the following new wells were reported as ready to drill:

Company	Sec.	Twp.	Range	Well No.	Field
KERN COUNTY:					
Pan American Petroleum Co.	34	30	24	13	Elk Hills
Pan American Petroleum Co.	25	30	23	1	Elk Hills
Berry & Ewing	31	32	24	1	Midway
Brookshire Oil Co.	24	31	22	10	Midway
C. C. M. O. Co.	22	31	22	27	Midway
C. C. M. O. Co.	22	31	22	25	Midway
C. C. M. O. Co.	22	31	22	26	Midway
C. C. M. O. Co.	25	31	22	12	Midway
C. C. M. O. Co.	9	32	23	28	Midway
Formax Oil Co.	36	32	23	4	Midway
Fresno Five Oil Co.	36	32	23	1	Midway
Mascot Oil Co.	36	32	23	1	Midway
Midland Oil Fields Co., Ltd.	34	31	24	1	Midway
Pacific Oil Co.	31	31	24	223	Midway
Pacific Oil Co.	35	31	23	75	Midway
Pacific Oil Co.	1	32	23	111	Midway
Pacific Oil Co.	1	32	23	63	Midway
Pacific Oil Co.	27	31	23	62	Midway
Pacific Oil Co.	29	32	24	30	Midway
Kerntaft Petroleum Co.	29	12	24	1	Sunset
Standard Oil Co.	28	11	20	Kern Co. L. 2 4	Wheeler Ridge
Kern-Torrance Petroleum Co.	13	9	10	1	----------
Main Oil Co. of California	28	27	24	1	----------

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES COUNTY:					
A. & P. Syn.	24	4	13	1	Long Beach
Bemco Oil Syn. No. 1	24	4	13	1	Long Beach
Benwell Drilling Co.	30	4	12	Benwell 3	Long Beach
Bona Fide Oil Corp.	30	4	12	Poole Hawkins 2	Long Beach
Albert L. Cheney, trustee	30	4	12	1	Long Beach
Crescent Oil Co.	19	4	12	1	Long Beach
Coast States Oil Co.	30	4	12	2	Long Beach
Coast States Oil Co.	30	4	12	May Richards 1	Long Beach
Dabney Oil Syn.	30	4	12	22	Long Beach
Geo. F. Getty	24	4	13	8	Long Beach
Geo. F. Getty	19	4	12	Long Beach 9	Long Beach
Graham & Loftus Oil Co.	19	4	12	2	Long Beach
Graham & Loftus	30	4	12	Lightburn 2	Long Beach
H. & T. Syn.	30	4	12	2	Long Beach
Harmony Dobyns Oil Syn.	30	4	12	3	Long Beach
Hawthorne Oil Co.	19	4	12	2	Long Beach
Hull Brennan Syn.	19	4	12	1	Long Beach
A. T. Jergins Trust	19	4	12	3	Long Beach
A. T. Jergins Trust	19	4	12	6	Long Beach
McGregor Syn. No. 2	29	4	12	1	Long Beach
Mack Number One Trust	30	4	12	1	Long Beach
Marine Oil Corp.	19	4	12	6	Long Beach
E. J. Miley	13	4	13	5	Long Beach
M. H. Mosier Special	19	4	12	1	Long Beach
Painted Hills Oil Assn.	20	4	12	4	Long Beach
Petroleum Midway Co., Ltd.	19	4	12	Fields 3	Long Beach
Petroleum Midway Co., Ltd.	19	4	12	O'Neill 1	Long Beach
Rice Ranch Oil Co.	19	4	12	5	Long Beach
Shell Co.	29	4	12	Bixby 2	Long Beach
Shell Co.	29	4	12	Jones Com. 4	Long Beach
Shell Co.	29	4	12	Nichclson 3	Long Beach
Shell Co.	29	4	12	Mills 1	Long Beach
Shell Co.	29	4	12	Patton Wilson 2	Long Beach
Tehmescal Oil Co.	20	4	12	5-A	Long Beach
Union Oil Co.	29	4	12	Hart 3	Long Beach
Union Oil Co.	29	4	12	Hart 2	Long Beach
United Oil Co.	13	4	13	Bixby 1	Long Beach
U. S. Royalties Co.	24	4	13	1	Long Beach
Wigle & McBride	19	4	12	Thompson 1	Long Beach
Kenneth R. Woolley	30	4	12	10	Long Beach
Kenneth R. Woolley	30	4	12	8	Long Beach
Amalgamated Oil Co.	6	3	11	Green 2	Santa Fe Springs
Amalgamated Oil Co.	6	3	11	Green 1	Santa Fe Springs
Amalgamated Oil Co.	31	2	11	Dallugge 5	Santa Fe Springs
Amalgamated Oil Co.	6	3	11	Dewenter 3	Santa Fe Springs
American Oil Syn.	18	3	11	1	Santa Fe Springs
Associated Oil Co.	1	3	12	Clarke 1	Santa Fe Springs
Associated Oil Co.	1	3	12	Clarke 2	Santa Fe Springs
Associated Oil Co.	1	3	12	Clarke 3	Santa Fe Springs
Brady 8 Well Syn.	8	3	11	2	Santa Fe Springs
Buckeye Union Oil Co.	5	3	11	4	Santa Fe Springs
Cecelia Petroleum Co.	6	3	11	1-A	Santa Fe Springs
Co-Operative Petroleum Syn. No. 3	35	2	12	3	Santa Fe Springs
Equitable Oil Syn.	17	3	11	1	Santa Fe Springs
Fred B. Foster & Co.	6	3	11	50	Santa Fe Springs
Fred B. Foster & Co.	1	3	12	52	Santa Fe Springs
General Petroleum Corp.	6	3	11	Santa Fe 79-C	Santa Fe Springs
General Petroleum Corp.	5	3	11	Santa Fe 43	Santa Fe Springs
General Petroleum Corp.	5	3	11	Santa Fe 52-B	Santa Fe Springs
George F. Getty	5	3	11	13	Santa Fe Springs
Oscar R. Howard	6	3	11	Hathaway 3	Santa Fe Springs
Industrial Oil Syn. No. 3	7	3	11	32	Santa Fe Springs
C. C. Julian	1	3	12	5	Santa Fe Springs
C. C. Julian	6	3	11	7	Santa Fe Springs
C. C. Julian	1	3	12	8	Santa Fe Springs
Petroleum Midway Co., Ltd.	6	3	11	Mattern Three 4	Santa Fe Springs
Petroleum Midway Co., Ltd.	6	3	11	Mattern Two 5	Santa Fe Springs
Petroleum Midway Co., Ltd.	6	3	11	Patterson 8	Santa Fe Springs
Petroleum Midway Co., Ltd.	6	3	11	Mattern Three 5	Santa Fe Springs
Petroleum Midway Co., Ltd.	6	3	11	Mattern Three 6	Santa Fe Springs
Petroleum Midway Co., Ltd.	6	3	11	Mattern Two 4	Santa Fe Springs
Petroleum Midway Co., Ltd.	6	3	11	Mattern Three 7	Santa Fe Springs
Petrcleum Midway Co., Ltd.	6	3	11	Mattern Three 2-A	Santa Fe Springs
Petroleum Midway Co., Ltd.	6	3	11	Steinly 2	Santa Fe Springs
Petrcleum Midway Co., Ltd.	6	3	11	Baldwin 2	Santa Fe Springs
Santa Fe Bell Oil Co.	12	3	12	1	Santa Fe Springs
Shell Co.	31	2	11	G.H.N. 5	Santa Fe Springs
Shell Co.	6	3	11	Slusher 3	Santa Fe Springs
Standard Oil Co.	6	3	11	Weisel 2	Santa Fe Springs
Standard Oil Co.	5	3	11	S.Whittier Com. 14	Santa Fe Springs
Standard Oil Co.	6	3	11	Weisel 3	Santa Fe Springs
Standard Oil Co.	31	2	11	Santa Gertrudes 3-A	Santa Fe Springs
Standard Oil Co.	6	3	11	Weisel 4	Santa Fe Springs

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES CO.—Cont.					
Stewart Anderson Syn.	7	4	11	1-A	Santa Fe Springs
U. S. Royalties Co.	6	3	11	2	Santa Fe Springs
Universal Cons. Oil Co.	6	3	11	2	Santa Fe Springs
Wilshire Oil Co.	6	3	11	1	Santa Fe Springs
C. C. M. O. Co.	8	4	14	Del Amo 7	Torrance
George F. Getty	15	4	14	2	Torrance
Peterson-Barker Syn.	12	4	14	1	Torrance
Petroleum Midway Co., Ltd.	9	4	14	Gish 1	Torrance
Hoard & Scully	26	1	13	1	----------
D. Herbert Hostetter	3	2	13	1	----------
ORANGE COUNTY:					
Petroleum Products Syn.	14	3	11	1	Coyote Hills
Amalgamated Oil Co.	34	5	11	Fowler 7	Huntington Beach
Fred B. Foster & Co.	2	6	11	51	Huntington Beach
Jameson Oil Co.	2	6	11	Block B 2	Huntington Beach
McKeon Syn.	2	6	11	1	Huntington Beach
Miley Keck Oil Co.	35	5	11	23	Huntington Beach
Miley Keck Oil Co.	2	6	11	38	Huntington Beach
Miley Keck Oil Co.	2	6	11	41	Huntington Beach
Pacific Petroleum Corp.	2	6	11	10	Huntington Beach
Petroleum Midway Co., Ltd.	2	6	11	Pearce 2	Huntington Beach
Petroleum Midway Co., Ltd.	2	6	11	Elliott 3	Huntington Beach
Shell Co. (U. D.)	34	5	11	Ashton 8	Huntington Beach
Shell Co. (U. D.)	34	5	11	Ashton 7	Huntington Beach
Standard Oil Co.	2	6	11	Hunt. B. 21	Huntington Beach
Standard Oil Co.	2	6	11	Hunt. B. 22	Huntington Beach
Standard Oil Co.	29	5	11	Bolsa 9-A	Huntington Beach
Standard Oil Co.	12	6	11	Farnsworth 2-A	Huntington Beach
U. S. Royalties Co.	2	6	11	1	Huntington Beach
Western Petroleum Corp.	2	6	11	1	Huntington Beach
White Behr Petroleum Syn.	2	6	11	Jackie Coogan 5	Huntington Beach
Union Oil Company	29	3	9	Chapman 23	Richfield
RIVERSIDE COUNTY:					
Cheney Oil Lease Syn.	14	2	3	1	----------
SAN DIEGO COUNTY:					
Mission Bay Oil Co.	29	16	3	1	----------
SAN MATEO COUNTY—					
Elk Hills Pool Oil Co.	Ormonde Ranch			1	----------
Northern Exploration Co.	21	7	4	1	----------
SANTA BARBARA COUNTY:					
Jalama Oil & Development Co.	*	7	33	1	----------
Jalama Oil & Development Co.	*	7	33	2	----------
VENTURA COUNTY:					
Bardsdale Crude Oil Co.	12	3	20	9	Bardsdale
National Drilling & Dev. Co.	28	4	23	1	Ojai
Buena Ventura Oil Co.	14	4	18	1	Piru
Santa Paula Oil Co.	18	3	20	Santa Paula 16	South Mountain
R. L. Hinckley	33	4	23	15	Ventura

*Barker Ranch, Santa Rosa Rancho.

From April 7, 1923, to and including June 9, 1923, the following new wells were reported as ready to drill:

Company	Sec.	Twp.	Range	Well No.	Field
FRESNO COUNTY:					
West Coalinga Oil & Dev. Co.	6	21	15	3	Coalinga
Fresno United Oil Co.	23	15	18	2	----------
KERN COUNTY:					
Mendocino Midway Oil Syn.	6	30	24	2	Elk Hills
Pacific Oil Co.	35	30	24	40	Elk Hills
Pacific Oil Co.	35	30	24	87	Elk Hills
Pan American Pet. Co.	34	30	24	17	Elk Hills
Pan American Pet. Co.	34	30	24	16	Elk Hills
Pan American Pet. Co.	34	30	24	15	Elk Hills
Pan American Pet. Co.	34	30	24	14	Elk Hills
J. J. Kelly	31	28	29	1	Kern River
Berry & Ewing	31	32	24	11	Midway
Big Ten Oil Co.	36	32	23	1	Midway
Big Ten Oil Co.	36	32	23	2	Midway
Boston Pacific Oil Co.	32	31	24	2-D	Midway
C. C. M. O. Co.	9	32	23	29	Midway
C. C. M. O. Co.	25	31	22	13	Midway
C. C. M. O. Co.	26	31	22	8	Midway
C. C. M. O. Co.	22	31	22	32	Midway

Company	Sec.	Twp.	Range	Well No.	Field
KERN COUNTY—Continued.					
Christine Oil Syn.	21	31	22	2	Midway
Honolulu Cons. Oil Co.	6	32	24	13	Midway
Honolulu Cons. Oil Co.	6	32	24	14	Midway
Honolulu Cons. Oil Co.	6	32	24	28	Midway
Honolulu Cons. Oil Co.	6	32	24	12	Midway
Formax Oil Co.	36	32	23	6	Midway
Formax Oil Co.	36	32	23	5	Midway
Kerntatt Petroleum Co.	36	32	23	1	Midway
North American Oil Cons.	30	31	24	2	Midway
Pacific Oil Co.	31	31	24	34	Midway
Pacific Oil Co.	31	31	24	35	Midway
Pacific Oil Co.	36	31	23	80	Midway
Pacific Oil Co.	5	32	24	70	Midway
Pacific Oil Co.	5	32	24	92	Midway
Pacific Oil Co.	15	32	24	92	Midway
Pacific Oil Co.	25	31	23	68	Midway
Surprise Oil Co.	36	32	23	8	Midway
Western Extension Oil Co.	6	31	23	1	Midway
Wm. G. McAdoo, Jr. and Robert K. Gilbert	34	11	20	1	Wheeler Ridge
A. A. Rollestone	32	11	20	1	Wheeler Ridge
Standard Oil Co.	28	11	20	Kern Co. 2 5	Wheeler Ridge
Big Eight Oil Co.	2	27	18	2	----------
Kern 29 Oil Co.	29	31	30	1	----------
KINGS COUNTY:					
Pacific Oil & Gas Co.	13	23	20	2	----------
Sagebrush Oil & Gas Co.	17	22	19	Lakeshore 3	----------
LOS ANGELES COUNTY:					
Angelus Syn.	19	4	12	3	Long Beach
Lou Anger Oil Syn.	19	4	12	2	Long Beach
W. A. Bartholomae, Jr.	24	4	13	3	Long Beach
Bay Hills Oil & Land Co.	24	4	13	Special Del. 1	Long Beach
Bay Hills Oil & Land Co.	19	4	12	Special Del. 2	Long Beach
Black Star Oil Co.	30	4	12	2	Long Beach
Bush-Voorhis Oil Co.	19	4	12	11	Long Beach
Cal. Co-Operative Syn. No. 2	24	4	13	1	Long Beach
Cal. Co-Operative Syn. No. 2	20	4	12	2	Long Beach
California Signal Syn. No. 3	30	4	12	3	Long Beach
Cal-Mex Oil & Refining Co.	19	4	12	Kirkpatrick 3	Long Beach
Carlton Petroleum Co.	24	4	13	1	Long Beach
Cook & Harpster	19	4	12	1	Long Beach
Cooper Petroleum Co.	19	4	12	Duncan 3	Long Beach
Core Oil Syn.	24	4	13	1	Long Beach
R. C. Cotton	24	4	13	1	Long Beach
Crown City Oil Co.	19	4	12	1	Long Beach
D. & H. Syn.	19	4	12	1	Long Beach
Dabney Oil Syn.	19	4	12	14-A	Long Beach
Dave Ebersole Oil Syn.	24	4	13	1	Long Beach
Walter H. Fisher	30	4	12	6	Long Beach
General Petroleum Corp.	28	4	12	Bixby 2	Long Beach
Geo. F. Getty	29	4	12	4-A	Long Beach
A. F. Gilmore Co.	24	4	13	Smith 1	Long Beach
Huntington & Northern Pet. Co.	19	4	12	9	Long Beach
Industrial Oil Syn. No. 4	19	4	12	41-A	Long Beach
Interstate Oil Corp.	29	4	12	Jones 1-A	Long Beach
A. T. Jergins Trust	19	4	12	7	Long Beach
Keck Syn. No. 4	30	4	12	3	Long Beach
Keck Syn. No. 5	24	4	13	3	Long Beach
Keck Syn. No. 6	24	4	13	1	Long Beach
E. G. Lewis	30	4	12	5	Long Beach
Long Beach Petroleum Syn.	24	4	13	1	Long Beach
Marine Oil Corp.	19	4	12	15	Long Beach
Marine Oil Corp.	29	4	12	19-A	Long Beach
Marine Oil Corp.	19	4	12	18	Long Beach
Old Colony Trust No. 1	30	4	12	1	Long Beach
Optic Oil Syn.	30	4	12	1	Long Beach
Pan American Petroleum Co.	19	4	12	U. P. 1	Long Beach
Pan American Petroleum Co.	19	4	12	U. P. 2	Long Beach
Pan American Petroleum Co.	19	4	12	U. P. 6	Long Beach
Pan American Petroleum Co.	19	4	12	U. P. 5	Long Beach
Pan American Petroleum Co.	29	4	12	Anderson 2	Long Beach
Petroleum Midway Co., Ltd.	29	4	12	Booth 1	Long Beach
Petroleum Midway Co., Ltd.	19	4	12	Gray 1-A	Long Beach
Petroleum Midway Co., Ltd.	19	4	12	Harlow 7	Long Beach
W. R. Ramsey	29	4	12	Coffin 1	Long Beach
Shell Co.	29	4	12	Pickler 5	Long Beach
Shell Co.	29	4	12	Cherry Hill Com. 4	Long Beach
Shell Co.	30	4	12	Burgess 1	Long Beach
Shell Co.	28	4	12	Connett 1-A	Long Beach
Shell Co.	29	4	12	Wilbur 3-A	Long Beach

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES CO.—Cont.					
Shell Co.	29	4	12	Hughes 1	Long Beach
Shell Co.	29	4	12	Stakemiller 2	Long Beach
Shell Co.	29	4	12	Babb & Tucker 3	Long Beach
Shell Co.	29	4	12	Martin Com. 3	Long Beach
Shell Co.	29	4	12	Shell Fee Land 1	Long Beach
Shell Co.	19	4	12	Cresson 4	Long Beach
Shell Co.	29	4	12	Nesa 4-A	Long Beach
Southwestern Oil Syn.	30	4	12	1	Long Beach
Three for One Oil Royalties	19	4	12	Kibbe & Yochem 1	Long Beach
Three for One Oil Royalties	19	4	12	Maise 2	Long Beach
Three for One Oil Royalties	30	4	12	Lovelady 1	Long Beach
Union Oil Co.	30	4	12	L. B. Com. 11	Long Beach
Union Oil Co.	30	4	12	L. B. Com. 10	Long Beach
United Oil Co.	19	4	12	Malc.-Davis 2	Long Beach
U. S. Oil Co.	30	4	12	1	Long Beach
U. S. Royalties Co.	24	4	13	8	Long Beach
West Coast Crude, Trust	24	4	13	Bishop 1	Long Beach
Western Oil Dev. Co.	24	4	13	1	Long Beach
Western Petroleum Corp.	19	4	12	Frog Pond 1-A	Long Beach
Western Petroleum Corp.	19	4	12	Gurnsey 1	Long Beach
Whiston, Winger & Co.	19	4	12	Fullerton 1	Long Beach
Wilshire Oil Co.	24	4	13	Gordon 1	Long Beach
Wilshire Oil Co.	24	3	13	Brady 1	Long Beach
Shell Co.	1	2	12	9-A	Montebello
H. L. Whiston Co.	34	1	12	1	Montebello
Ambassador Petroleum Co.	6	3	11	Baker 4	Santa Fe Springs
Ambassador Petroleum Co.	6	3	11	Baker 2	Santa Fe Springs
Ambassador Petroleum Co.	6	3	11	Baker 3	Santa Fe Springs
J. E. Anderson	6	3	11	1	Santa Fe Springs
Associated Oil Co.	1	3	12	Clarke 6	Santa Fe Springs
Associated Oil Co.	1	3	12	Clarke 12	Santa Fe Springs
Bandini Petroleum Co.	6	3	11	Off 2	Santa Fe Springs
Boeseke Syn.	1	3	12	2	Santa Fe Springs
Boeseke Syn.	1	3	12	5	Santa Fe Springs
L. B. Chase Oil Co.	11	3	12	1	Santa Fe Springs
Elliott Extension Oil Co.	1	3	12	1	Santa Fe Springs
First National Petroleum Co.	35	2	12	1	Santa Fe Springs
Fred B. Foster & Co.	1	3	12	56	Santa Fe Springs
Fred B. Foster & Co.	1	3	12	61	Santa Fe Springs
General Petroleum Corp.	5	3	11	Santa Fe 1-A	Santa Fe Springs
General Petroleum Corp.	6	3	11	Santa Fe S6-C	Santa Fe Springs
General Petroleum Corp.	5	3	11	Santa Fe 13	Santa Fe Springs
General Petroleum Corp.	5	3	11	Santa Fe 12	Santa Fe Springs
General Petroleum Corp.	6	3	11	Santa Fe 90-B	Santa Fe Springs
General Petroleum Corp.	5	3	11	Santa Fe 14	Santa Fe Springs
Geo. F. Getty	5	3	11	14	Santa Fe Springs
Grunwell Oil Corp.	5	3	11	1	Santa Fe Springs
Hamilton Oil Syn.	7	3	11	6	Santa Fe Springs
Hopkins & Howland	6	3	11	Baker 2	Santa Fe Springs
Industrial Oil Syn.	6	3	11	12	Santa Fe Springs
C. C. Julian & Co.	6	3	11	12	Santa Fe Springs
Klauser & Co.	8	3	11	1	Santa Fe Springs
Klondyke Oil Co.	9	3	11	1	Santa Fe Springs
McKeon Drilling Co.	6	3	11	Bossick 1-A	Santa Fe Springs
Machris Bros. Syn. No. 2	5	3	11	Babonet 2	Santa Fe Springs
Machris Bros. Syn. No. 2	5	3	11	Landl 2	Santa Fe Springs
Parkford Royalty	6	3	11	1	Santa Fe Springs
Petroleum Midway Co., Ltd.	6	3	11	Mattern Two 3	Santa Fe Springs
Reid & Berliner	6	3	11	Reiber 1	Santa Fe Springs
Russell Petroleum Co.	1	3	12	6	Santa Fe Springs
Russell Petroleum Co.	1	3	12	3	Santa Fe Springs
Santa Fe Dome Syn. No. 2	8	3	11	1	Santa Fe Springs
Santa Fe Springs Oil Syn. No. 1	6	3	11	3-A	Santa Fe Springs
Shell Co.	31	2	11	G.H.N. 6	Santa Fe Springs
Shell Co.	6	3	11	Slusher 4	Santa Fe Springs
Shell Co.	31	2	11	G.H.N. 8	Santa Fe Springs
Southern California Oil Co.	6	3	11	1-A	Santa Fe Springs
Southwest Petroleum Syn.	35	3	12	Harris 1	Santa Fe Springs
Standard Oil Co.	31	2	11	Wolfskill 2	Santa Fe Springs
Standard Oil Co.	6	3	11	Weisel 6	Santa Fe Springs
Standard Oil Co.	31	2	11	Hepler 4	Santa Fe Springs
Standard Oil Co.	1	3	12	Watson 2	Santa Fe Springs
Standard Oil Co.	6	3	11	Weisel 5	Santa Fe Springs
Standard Oil Co.	36	2	12	Jordan 3	Santa Fe Springs
Superior Oil Co.	6	3	11	Wardman 3	Santa Fe Springs
Triangle Oil Syn. No. 2	7	3	11	2	Santa Fe Springs
Joe B. Turman Oil Syn.	12	3	12	3	Santa Fe Springs
Union Oil Co.	5	3	11	Meyer 1	Santa Fe Springs
Union Oil Co.	5	3	11	Farwell 6	Santa Fe Springs
Union Oil Co.	5	3	11	Farwell 8	Santa Fe Springs
Union Oil Co.	32	2	11	Farwell 9	Santa Fe Springs
Union Oil Co.	5	3	11	Farwell 5	Santa Fe Springs

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES CO.—Cont.					
United States Royalties Co.	6	3	11	3	Santa Fe Springs
Universal Cons. Oil Co.	6	3	11	4	Santa Fe Springs
Wilshire Oil Co.	6	3	11	Fraser 3	Santa Fe Springs
Wilshire Oil Co.	6	3	11	Fraser 2	Santa Fe Springs
York-Smullin Drilling Co.	5	3	11	Nordstrum 1	Santa Fe Springs
Amalgamated Oil Co.	8	4	14	Watson 2	Torrance
C. C. M. O. Co.	15	4	14	Torrance 8	Torrance
C. C. M. O. Co.	15	4	14	Torrance 9	Torrance
C. C. M. O. Co.	15	4	14	Torrance 7	Torrance
C. C. M. O. Co.	10	4	14	Torrance 11	Torrance
C. C. M. O. Co.	15	4	14	Torrance 10	Torrance
Hub Oil Co.	15	4	14	Smith 2	Torrance
Midway Northern Oil Co.	15	4	14	1	Torrance
Sentinel Oil Co.	15	4	14	1	Torrance
Trimble & Rhea	10	4	14	1	Torrance
U. S. Royalties Co.	10	4	14	9	Torrance
Amazon Drilling Corp.	5	2	14	Baldwin 1	----------
Calpetro Producers Syn.	15	3	12	2	----------
Calpetro Producers Syn.	15	3	12	2–A	----------
Coast Line Cons. Oils, Inc.	17	3	13	Sandburg Com. 1	----------
Dome Oil Co.	28	3	14	1	----------
C. C. Julian	29	3	13	Pico 1	----------
Keck Syn. No. 6	1	5	14	2	----------
Giant Petroleum Co.	5	3	12	1	----------
The Locators' Co.	27	2	14	3	----------
A. L. Oliger	17	4	13	1	----------
Reider-Haag Co.	35	1	17	2	----------
Santa Fe Western Ext.	9	3	12	1	----------
ORANGE COUNTY:					
Birch Oil Co.	2	3	10	11–A	Brea Olinda
Standard Oil Co.	18	3	10	M-C 99	Coyote Hills
Auburn Oil Co.	2	6	11	2	Huntington Beach
Barnett Anchor Oil Co.	2	6	11	3	Huntington Beach
Bolsa Chica Petroleum Corp.	2	6	11	3	Huntington Beach
Dodge Syn.	34	5	11	1	Huntington Beach
Federal Drilling Co.	35	5	11	1	Huntington Beach
Globe Petroleum Corp.	35	5	11	La Bolsa Tile 1	Huntington Beach
Gypsy Oil Syn.	11	6	11	Judson House 5	Huntington Beach
Holly Development Co.	2	6	11	Turley 4	Huntington Beach
Invader Oil Co.	2	6	11	Miller 1–A	Huntington Beach
Pan American Petroleum Co.	2	6	11	3	Huntington Beach
Pan American Petroleum Co.	2	6	11	5	Huntington Beach
Pan American Petroleum Co.	34	5	11	6	Huntington Beach
E. A. Parkford	1	6	11	1	Huntington Beach
E. A. Parkford	1	6	11	Wright 1	Huntington Beach
Petroleum Midway Co., Ltd.	35	5	11	Savage 2	Huntington Beach
Petroleum Midway Co., Ltd.	2	6	11	Columbia 3 3	Huntington Beach
Petroleum Midway Co., Ltd.	2	6	11	Columbia 1 3	Huntington Beach
Reliance Oil Co.	34	5	11	4	Huntington Beach
Republic Prod. Co.	2	6	11	Crane 9	Huntington Beach
Republic Prod. Co.	2	6	11	Kirk 7	Huntington Beach
Fred Ruether	35	5	11	1	Huntington Beach
Ryan Petroleum Syn.	34	5	11	1	Huntington Beach
Sequoia Oil Co.	30	5	11	1	Huntington Beach
Standard Oil Co.	12	6	11	Thomson 3	Huntington Beach
Standard Oil Co.	13	6	11	Surf 3	Huntington Beach
Union Oil Co.	35	5	11	Copeland 20	Huntington Beach
Union Oil Co.	34	5	11	Copeland 21	Huntington Beach
Utacal Oil Trust	2	6	11	1–A	Huntington Beach
SAN MATEO COUNTY:					
Big Basin Paraffin Oil Co.	10	8	3	1	----------
Elk Hills Pool Oil Co.	M. U.	Souza	Ranch	1	----------
SANTA CLARA COUNTY:					
Santa Clara Oil Co.	1	12	3	1	----------
SONOMA COUNTY:					
Alexander Valley Oil Co.	--	10	9	1	----------
TULARE COUNTY:					
Dun Mar Oil Co.	Lot 434	23	23	1	----------
	Home	Ex. Col.	Alpaugh		
Geo. F. King	22	22	27	1	----------
VENTURA COUNTY:					
Dr. J. Von Gal Scale	4	1	20	13	Conejo
Eureka Canon Petroleum Co.	33	4	18	1	Piru
Schell & Jennings	32	4	18	6	Piru.
Lincoln Oil & Gas Co.	21	4	21	27	Santa Paula
Santa Paula Oil Co.	18	3	20	Santa Paula 18	South Mountain
Associated Oil Co.	19	3	23	Taylor 1–A	Ventura
YOLO COUNTY:					
Swastika Oil Co.	22	12	3	1	----------

From June 9, 1923, to and including September 8, 1923, the following new wells were reported as ready to drill:

Company	Sec.	Twp.	Range	Well No.	Field
FRESNO COUNTY:					
Snowolene Oil Co.	22	21	15	1	----------
KERN COUNTY:					
Bear State Oil Co.	30	28	21	11	Belridge
Pacific Oil Co.	25	30	24	49	Elk Hills
Pan American Petroleum Co.	2	31	24	Crampton 8-G	Elk Hills
Pan American Petroleum Co.	1	31	23	1	Elk Hills
Pan American Petroleum Co.	1	31	23	2	Elk Hills
Nova Kern Petroleum Co.	6	29	28	26	Kern River
McKittrick Chief Oil Co.	29	30	22	1	McKittrick
Big Ten Oil Co.	36	32	23	3	Midway
C. C. M. O. Co.	9	32	23	31	Midway
C. C. M. O. Co.	22	31	22	31	Midway
C. C. M. O. Co.	25	31	22	23	Midway
C. C. M. O. Co.	22	31	22	30	Midway
C. C. M. O. Co.	9	32	23	39	Midway
C. C. M. O. Co.	22	31	22	29	Midway
Formax Oil Co.	36	32	23	7	Midway
Formax Oil Co.	36	32	23	8	Midway
Honolulu Consolidated Oil Co.	6	32	24	38	Midway
Honolulu Consolidated Oil Co.	6	32	24	48	Midway
Mascot Oil Co.	36	32	23	2	Midway
Midland Oilfields Co., Ltd.	24	31	23	4	Midway
North American Oil Cons.	30	31	24	3	Midway
North American Oil Cons.	30	31	24	4	Midway
Pacific Oil Co.	31	31	24	26	Midway
Pacific Oil Co.	35	31	23	81	Midway
Pacific Oil Co.	31	31	24	36	Midway
Pacific Oil Co.	1	32	23	105	Midway
Pacific Oil Co.	31	31	24	33	Midway
Pacific Oil Co.	5	32	24	41	Midway
Pacific Oil Co.	25	31	23	34	Midway
Pinal Dome Corp.	24	31	22	Coalinga-Mont. 4	Midway
Surprise Oil Co.	36	32	23	7	Midway
Vivian B. Oil Co.	35	32	23	4	Midway
Calitroleum Oil & Gas Co.	4	11	23	3	Sunset
General Petroleum Corp.	32	12	23	9-A	Sunset
Pinal Dome Corp.	20	29	21	Miller & Lux 1	Temblor
General Petroleum Corp.	28	11	20	1	Wheeler Ridge
C. S. Akers	18	27	19	1	----------
Fresno Sunmaid Oil Co.	16	11	24	1	----------
T. A. Piper	11	27	28	Piper 1	----------
KINGS COUNTY:					
Pacific Oil and Gas Co.	13	23	20	3	----------
LOS ANGELES COUNTY:					
Acme Petroleum Corp.	19	4	12	Damron 3	Long Beach
B. C. & L. Oil Co.	24	4	13	Herwick 12	Long Beach
Bartholomae Oil Corp.	19	4	12	Tom Johnson 1	Long Beach
Bemco Oil Syn. No. 1	24	4	13	1-A	Long Beach
Big 3 Oil Co.	24	4	13	1	Long Beach
Black Gold Royalties	24	4	13	1	Long Beach
Bolan & McNeice	19	4	12	1	Long Beach
Bush Voorhis Oil Co.	19	4	12	12	Long Beach
California Signal Well No. 4	30	4	12	1	Long Beach
Cooper Petroleum Co.	19	4	12	3	Long Beach
Dabney & Delaney	24	4	13	Natzke 1	Long Beach
Davis & McMillan Co.	29	4	12	6	Long Beach
J. J. Doyle & J. W. Clune	29	4	12	2	Long Beach
Ford and Eves Syn.	20	4	12	1	Long Beach
Fred B. Foster & Co.	30	4	12	65	Long Beach
General Petroleum Corp.	30	4	12	Jonah 3	Long Beach
General Petroleum Corp.	20	4	12	Scoco 2-A	Long Beach
Golaspy Drilling Co.	29	4	12	1	Long Beach
H. C. & S. Oil Co.	24	4	13	1	Long Beach
Hackworth & Brunwin	24	4	13	Cullan Landis 1	Long Beach
Hall-Weber Oil Co.	29	4	12	2	Long Beach
Havenstrite & Baker	19	4	12	1	Long Beach
Herwick No. 7 Syn.	24	4	13	11	Long Beach
Hub Oil Co.	24	4	13	Beck 2	Long Beach
Hub Oil Co.	24	4	13	Security 1	Long Beach
R. E. Ibbetson	19	4	12	1	Long Beach
Interstate Oil Corp.	19	4	12	Peck 1	Long Beach
Interstate Oil Corp.	19	4	12	Olson 2	Long Beach
A. T. Jergins Trust	19	4	12	8	Long Beach
O. D. Knight et al.	19	4	12	2	Long Beach
Lacal Oil Co.	29	4	12	3	Long Beach
Lang-Wall	24	4	13	2	Long Beach

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES CO.—Cont.					
M. K. M. Syn.	19	4	12	1	Long Beach
Malin No. 1. Trust No. 509	19	4	12	1	Long Beach
Marine Oil Corp.	19	4	12	13-A	Long Beach
Marine Oil Corp.	20	4	12	10	Long Beach
Marine Oil Corp.	19	4	12	23	Long Beach
E. J. Miley	13	4	13	3-A	Long Beach
Harry C. Noonan & Co.	30	4	12	1	Long Beach
Painted Hills Oil Assn.	29	4	12	5	Long Beach
Pan American Petroleum Co.	19	4	12	4UP	Long Beach
Pan American Petroleum Co.	29	4	12	Anderson 3	Long Beach
Pan American Petroleum Co.	29	4	12	Stone 1	Long Beach
E. A. Parkford	19	4	12	Betz 2	Long Beach
H. H. Patton	19	4	12	4	Long Beach
Pentagon Oil Co.	24	4	13	1	Long Beach
Petroleum Midway Co., Ltd.	19	4	12	Gray 2	Long Beach
Petroleum Midway Co., Ltd.	19	4	12	Foster Two 1	Long Beach
Petroleum Midway Co., Ltd.	19	4	12	Foster Two 2	Long Beach
Petroleum Midway Co., Ltd.	19	4	12	Foster One 2	Long Beach
Petroleum Midway Co., Ltd.	19	4	12	Walker 1-A	Long Beach
Petroleum Midway Co., Ltd.	19	4	12	Fields 3-A	Long Beach
Petroleum Midway Co., Ltd.	29	4	12	Perrin 1-A	Long Beach
Petroleum Midway Co., Ltd.	19	4	12	Fields 4	Long Beach
Petroleum Midway Co., Ltd.	19	4	12	Fields 6	Long Beach
W. R. Ramsey	29	4	12	2-A	Long Beach
W. R. Ramsey	29	4	12	2-B	Long Beach
Rogers & Edwards	19	4	12	1	Long Beach
San Martinez Oil Co.	29	4	12	Booth Com. 2	Long Beach
Shell Co.	29	4	12	Alamitos 8	Long Beach
Shell Co.	29	4	12	Coseboom 4	Long Beach
Shell Co.	29	4	12	Coseboom 3	Long Beach
Shell Co.	20	4	12	Andrews 5	Long Beach
Shell Co.	19	4	12	Cresson Com. 5	Long Beach
Shell Co.	29	4	12	Alamitos 11	Long Beach
Shell Co.	29	4	12	Hutton Com. 5	Long Beach
Shell Co.	29	4	12	Nesa 5	Long Beach
Shell Co.	29	4	12	Alamitos 9	Long Beach
Shell Co.	19	4	12	Cresson Com. 6	Long Beach
Shell Co.	29	4	12	Binkley Com. 2	Long Beach
Shell Co.	29	4	12	Alamitos 10	Long Beach
Shell Co.	29	4	12	Patton Wilson 2-A	Long Beach
Shell Co.	29	4	12	Jones Com. 5	Long Beach
Shell Co.	29	4	12	Goddard 4	Long Beach
Shell Co.	29	4	12	Cherry Hill Com. 5	Long Beach
Shell Co.	29	4	12	Stratton 2	Long Beach
Shell Co.	29	4	12	Shell Fee Land 2	Long Beach
Shell Co.	29	4	12	Pickler 6	Long Beach
Shell Co.	29	4	12	Shell Fee Land 3	Long Beach
Shell Co.	29	4	12	Hamilton 2	Long Beach
Silverado Oil Co.	23	4	13	1	Long Beach
Special Delivery Oil Syn.	24	4	13	A	Long Beach
Special Delivery Oil Syn.	24	4	13	3-B	Long Beach
Superior Oil Co.	29	4	12	Miller 2	Long Beach
Jos. K. Tobin	24	4	13	2	Long Beach
Jos. K. Tobin	19	4	12	2	Long Beach
Clarence M. Turner Syn.	24	4	13	2	Long Beach
The United Oil Co.	19	4	12	Hass 8	Long Beach
The United Oil Co.	30	4	12	Hass 7	Long Beach
The United Oil Co.	19	4	12	Hass 9	Long Beach
United States Royalties Co.	24	4	13	7	Long Beach
The Virginian, Inc.	24	4	13	1	Long Beach
R. Whiston	24	4	13	2	Long Beach
Whittier Kent & Hellman	19	4	12	King Tut 1	Long Beach
Standard Oil Co.	1	2	12	Baldwin 62	Montebello
Amalgamated Oil Co.	6	3	11	Dewenter 4	Santa Fe Springs
Amalgamated Oil Co.	31	2	11	Dalluggee 6	Santa Fe Springs
Amazon Drilling Co.	6	3	11	Fulton 1	Santa Fe Springs
Amazon Drilling Co.	6	3	11	Fulton 2	Santa Fe Springs
Ambassador Oil Co.	5	3	11	Baker 5	Santa Fe Springs
Associated Oil Co.	1	3	12	Clarke 8	Santa Fe Springs
Associated Oil Co.	1	3	12	Clarke 5	Santa Fe Springs
Chas. B. Behr Oil Syn.	1	3	12	1	Santa Fe Springs
Elmer J. Boeseke, Jr.	1	3	12	6	Santa Fe Springs
Buckeye Union Oil Co.	5	3	11	5	Santa Fe Springs
Buckeye Union Oil Co.	5	3	11	6	Santa Fe Springs
Burbank Oil Co.	26	2	12	Crittenden 1	Santa Fe Springs
Commercial Refining Co.	1	3	12	1	Santa Fe Springs
Empire Drilling Co.	36	2	12	1	Santa Fe Springs
Fisher Gregg Oil Syn.	1	3	12	1	Santa Fe Springs
General Petroleum Corp.	6	3	11	Santa Fe 85-A	Santa Fe Springs
General Petroleum Corp.	6	3	11	Jalk 9	Santa Fe Springs
General Petroleum Corp.	5	3	11	Santa Fe 16	Santa Fe Springs
General Petroleum Corp.	5	3	11	Santa Fe 15	Santa Fe Springs
George F. Getty	5	3	11	S. F. S. 16	Santa Fe Springs

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES CO.—Cont.					
George F. Getty	5	3	11	S. F. S. 17	Santa Fe Springs
George F. Getty	6	3	11	S. F. S. 15	Santa Fe Springs
Globe Petroleum Corp.	1	3	12	de l'Eau 1	Santa Fe Springs
Oscar R. Howard	5	3	11	Bell 3	Santa Fe Springs
Oscar R. Howard	6	3	11	Hathaway 4	Santa Fe Springs
Oscar R. Howard	6	3	11	Hathaway 5	Santa Fe Springs
Industrial Oil Syn. No. 3	6	3	11	32	Santa Fe Springs
Interstate Petroleum Syn. No. 1	35	2	12	1	Santa Fe Springs
Jameson Petroleum Co.	6	3	11	7	Santa Fe Springs
Laddie Boy Oil Co.	1	3	12	1	Santa Fe Springs
Frank Peterson Syn.	6	3	11	2	Santa Fe Springs
Petroleum Midway Co., Ltd.	6	3	11	Mattern Two 6	Santa Fe Springs
Petroleum Midway Co., Ltd.	6	3	11	Steinly 3	Santa Fe Springs
Petroleum Midway Co., Ltd.	31	2	11	Mattern One 2	Santa Fe Springs
Santa Fe Springs Oil Syn. No. 1	6	3	11	4	Santa Fe Springs
Santa Fe Springs Oil Syn. No. 2	6	3	11	3	Santa Fe Springs
Shell Co.	6	3	11	Slusher 8	Santa Fe Springs
Shell Co.	6	3	11	Slusher 5	Santa Fe Springs
Shell Co.	31	2	11	G.H.N. 9	Santa Fe Springs
Shell Co.	31	2	11	G.H.N. 10	Santa Fe Springs
Shell Co.	31	2	11	Thompson 3	Santa Fe Springs
Shell Co.	31	2	11	G.H.N. 11	Santa Fe Springs
Shell Co.	31	2	11	G.H.N. 7	Santa Fe Springs
Shell Co.	6	3	11	Slusher 6	Santa Fe Springs
Shell Co.	6	3	11	Slusher 9	Santa Fe Springs
Shell Co.	6	3	11	Slusher 11	Santa Fe Springs
Shell Co.	6	3	11	Slusher 10	Santa Fe Springs
Shell Co.	6	3	11	Slusher 7	Santa Fe Springs
Southern California Oil Co.	6	3	11	2	Santa Fe Springs
Standard Oil Co.	31	2	11	Santa Gertrudes 5	Santa Fe Springs
Standard Oil Co.	36	2	12	Houghton 1	Santa Fe Springs
Standard Oil Co.	6	3	11	Jordan 2	Santa Fe Springs
Standard Oil Co.	6	3	11	Weisel 7	Santa Fe Springs
Standard Oil Co.	5	3	11	S.Whittier Com. 18	Santa Fe Springs
Standard Oil Co.	6	3	11	Koontz 5	Santa Fe Springs
Standard Oil Co.	5	3	11	S.Whittier Com. 17	Santa Fe Springs
Standard Oil Co.	6	3	11	Jordan 4	Santa Fe Springs
Standard Oil Co.	31	2	11	Santa Gertrudes 6	Santa Fe Springs
Standard Oil Co.	6	3	11	Weisel 8	Santa Fe Springs
Standard Oil Co.	6	3	11	Walker 10	Santa Fe Springs
Standard Oil Co.	31	2	11	Hepler 5	Santa Fe Springs
Standard Oil Co.	6	3	11	Koontz 6	Santa Fe Springs
Tri-Color Oil Co.	35	2	12	1	Santa Fe Springs
Union Oil Co.	5	3	11	Farwell 10	Santa Fe Springs
Universal Cons. Oil Co.	6	3	11	5	Santa Fe Springs
Wilshire Oil Co.	8	3	11	Meyer 2	Santa Fe Springs
Wilshire Oil Co.	6	3	11	Baker 1	Santa Fe Springs
Wilshire Oil Co.	6	3	11	Baker 2	Santa Fe Springs
Wilshire Oil Co.	6	3	11	Fraser 4	Santa Fe Springs
Wilshire Oil Co.	6	3	11	Fraser 6	Santa Fe Springs
Wilshire Oil Co.	6	3	11	Fraser 5	Santa Fe Springs
Wilshire Oil Co.	6	3	11	Baker 3	Santa Fe Springs
C. C. M. O. Co.	10	4	14	Torrance 12	Torrance
C. C. M. O. Co.	10	4	14	Torrance 17	Torrance
C. C. M. O. Co.	14	4	14	Torrance 14	Torrance
C. C. M. O. Co.	15	4	14	Torrance 13	Torrance
C. C. M. O. Co.	15	4	14	Torrance 15	Torrance
C. C. M. O. Co.	14	4	14	Torrance 16	Torrance
C. C. M. O. Co.	14	4	14	Torrance 18	Torrance
C. C. M. O. Co.	9	4	14	Del Amo 8	Torrance
Federal Drilling Co.	23	4	14	Gerner 1	Torrance
Federal Drilling Co.	23	4	14	Heyman 1	Torrance
Fortuna Oil Co.	23	4	14	1	Torrance
Geo. F. Getty	14	4	14	Torrance 3	Torrance
Gilmore Oil Co.	15	4	14	Davidson-Lowe 1	Torrance
Hub Oil Co.	14	4	14	B. & C. 1	Torrance
Petroleum Midway Co., Ltd.	14	4	14	Post-Houts 1	Torrance
Petroleum Midway Co., Ltd.	9	4	14	Craven Com. 1	Torrance
Petroleum Midway Co., Ltd.	8	4	14	Gish 2	Torrance
Petroleum Midway Co., Ltd.	15	4	14	Wilson Com. 1	Torrance
Petroleum Midway Co., Ltd.	10	4	14	Bowers 1	Torrance
Petroleum Midway Co., Ltd.	10	4	14	Scott 1	Torrance
Petroleum Midway Co., Ltd.	14	4	14	Pickler-Mitchell 1	Torrance
Petroleum Securities Co.	15	4	14	1	Torrance
Security Oil Syn. No. 2	23	4	14	1	Torrance
Selby and Root Co.	15	4	14	1	Torrance
Sentinel Oil Co.	24	4	14	1	Torrance
Southern Midway Oil Co.	10	4	14	1	Torrance
Standard Oil Co.	10	4	14	Torrance Com. 4	Torrance
Standard Oil Co.	8	4	14	Kirk Com. 4	Torrance
Standard Oil Co.	13	4	14	Dominguez 1	Torrance
Superior Oil Co.	14	4	14	Sterry 1	Torrance
Superior Oil Co.	10	4	14	Bowles 1	Torrance

Company	Sec.	Twp.	Range	Well No.		Field
LOS ANGELES CO—Cont.						
Superior Oil Co.	10	4	14	Hookway	1	Torrance
Superior Oil Co.	14	4	14	Steinhilber	2	Torrance
Superior Oil Co.	14	4	14	Steinhilber	1	Torrance
Superior Oil Co.	24	4	14	Joughin	1	Torrance
Universal Consolidated Oil Co.	23	4	14	Moore	1	Torrance
Downey Oil Syn.	4	3	12		1	----------
George F. Getty	28	3	13	Compton	1	----------
Julian Petroleum Corp.	25	3	12	Okell	1	----------
Pan American Petroleum Co.	2	3	15	Pac. Southwest	1	----------
Southland Petroleum Co.	9	2	15		1	----------
Union Oil Co.	29	3	11	Gardena	1	----------
Union Oil Co.	19	3	11	Rosecrans	1	----------
Union Oil Co.	33	3	13	Callender	3	----------
Wilshire Oil Co.	18	2	12	Arcadia	1	----------
MONTEREY COUNTY:						
Monterey Peninsular Oil Co.	8 miles E. of Monterey				1	----------
ORANGE COUNTY:						
Union Oil Co.	19	3	9	Tuffree	1	Coyote Hills
C. R. J. Oil Co.	6	6	10	Lamb	1	Huntington Beach
Chicksan Oil Co.	35	5	11		2	Huntington Beach
George F. Getty	2	6	11		3	Huntington Beach
Holly Development Co.	2	6	11	Turley	5	Huntington Beach
Holly Oil Co.	35	5	11		8	Huntington Beach
Julian Petroleum Corp.	34	5	11	Texcal	3	Huntington Beach
Leonard & Porter	2	6	11		2	Huntington Beach
Miley Keck Oil Co.	2	6	11		48	Huntington Beach
Miley Keck Oil Co.	2	6	11		28	Huntington Beach
Petroleum Midway Co., Ltd.	11	6	11	Taylor	1	Huntington Beach
Petroleum Midway Co., Ltd.	11	6	11	Brown	2	Huntington Beach
Petroleum Midway Co., Ltd.	35	5	11	Savage	3	Huntington Beach
Petroleum Midway Co., Ltd.	2	6	11	Ray Walker	1-A	Huntington Beach
Republic Prod. Co.	2	6	11	Kirk	8	Huntington Beach
Selby and Root Co.	34	5	11	Curtis	2-A	Huntington Beach
Standard Oil Co.	14	6	11	Mills	2	Huntington Beach
Standard Oil Co.	3	6	11	Hunt. A.	22	Huntington Beach
Standard Oil Co.	3	6	11	Hunt. A.	21	Huntington Beach
Standard Oil Co.	11	6	11	Talbert Com.	2	Huntington Beach
Standard Oil Co.	2	6	11	Hunt. D.	5	Huntington Beach
Texas Holding Co.	2	6	11		3-A	Huntington Beach
Newport Oil & Refining Co.	28	6	10	Newport	1	Newport
Petroleum Midway Co., Ltd.	34	3	9	Richfield Cons.	8	Richfield
Standard Oil Co.	13	4	10	Wagner Com.	1	----------
RIVERSIDE COUNTY:						
Murietta Valley Oil Co., a trust	14	7	3		1	----------
SACRAMENTO COUNTY:						
Associated Development Co.	25	6	7	Mitchell	2	----------
SAN JOAQUIN COUNTY:						
Allience Oil Co.	7	4	8		1	----------
SAN MATEO COUNTY:						
Unity Oil Co.	Driver Ranch, San Gregorio Rancho				1	----------
SONOMA COUNTY:						
Skaggs Springs Oil & Gas Co., Inc.	24	10	11		1	----------
Skaggs Springs Oil & Gas Co., Inc.	24	10	11		2	----------
STANISLAUS COUNTY:						
Stanislaus County Oil Syn.	14	6	7		1	----------
VENTURA COUNTY:						
Chas. E. Clinton	14	1	20		1	Conejo
A. H. MacFarland	33	4	18		1	Piru
Schell & Jennings	32	4	18		7	Piru
Sam O'Conner	20	5	19		1	Sespe
Santa Paula Oil Co.	18	3	20	Santa Paula	14	South Mountain
South Slope Oil Co.	23	3	21		1-A	South Mountain
Associated Oil Co.	27	3	23	Lloyd	8	Ventura

SPECIAL ARTICLES.

Detailed technical reports on special subjects, the result of research work or extended field investigations, will continue to be issued as separate bulletins by the Bureau, as has been the custom in the past.

Shorter and less elaborate technical papers and articles by members of the staff and others are published in each number of 'Mining in California.'

It is anticipated that these special articles will cover a wide range of subjects both of historical and current interest; descriptions of new processes, or metallurgical and industrial plants, new mineral occurrences, and interesting geological formations, as well as articles intended to supply practical and timely information on the problems of the prospector and miner, such as the text of new laws and official regulations and notices affecting the mineral industry.

CLAY DEPOSITS OF THE ALBERHILL COAL AND CLAY COMPANY.

By Jas. H. Hill.[1]

Location.

The clay deposits of the Alberhill Coal and Clay Company, comprising some two thousand acres of land, are situated at the town of Alberhill, in Riverside County, California, approximately seventy-five miles southeast of Los Angeles. Reference to the accompanying map, Plate 1, will indicate the region directly served by them, and their central location with respect to the many important towns and cities of this district.

The great economic importance of these deposits may be considered to be due to three main factors:

(1) The excellent quality, wide variety, and enormous quantities of the clays available.

(2) The extensive commercial development of the deposits over many years, resulting in cheapness of mining and large-scale production.

(3) The fortunate central location in a densely populated and rapidly growing section.

The portion of southern California served from these deposits has for several years shown an almost unprecedented growth in wealth, population, and commercial development, with a resulting demand for clay products of all kinds far in excess of the ability of local manufacturers to supply. Clay working plants have continually increased their capacities, and many new ones have sprung up in response to the insatiable demand for building materials and pottery wares of all sorts, so that the Los Angeles district is now one of the great clay-working centers of the United States. A great preponderance of the raw material for these plants has been supplied by the Alberhill deposits, owing to their natural advantages in quality of clays and cheap quantity production.

[1]President, Alberhill Coal and Clay Company.

Plate 1. Location of the Alberhill Coal and Clay Company's Deposits at Alberhill, California.

The occurrence of the Alberhill clays is uniquely favorable, since the deposits comprise an entire small mountain or detached foothill some five miles in circumference, rising abruptly from the floor of the Temescal Valley. The tracks of the Atchison, Topeka, and Santa Fe Railway skirt the base of this hill, closely adjacent to the clay pits themselves, so that the clay may proceed by gravity haulage direct to loading trestles over the rails. Further advantage of the elevation of the clays above the rails has been taken in the mining processes, as will be noted later, with the result that large tonnages are handled at a minimum cost.

General Geology.

"The valley in which these extensive deposits lie was in Tertiary times an arm of the sea opening northward into the valley of western San Bernardino County and extending southerly to Temecula. Its width is from one to two miles, but its depth is unknown, as at the old terra cotta works near Alberhill a drill hole was sunk over 600 feet without reaching the bottom of the basin."[1]

At the Alberhill pits, the clays present a wide diversity of color, character, and degree of consolidation. An extraordinary variety is found, including silicious fire clays, ball clays, plastic white- and buff-burning clays, highly aluminous and very refractory clays, numerous red-burning clays, and an extensive bed of material from which a china clay is obtained by washing. A bed of lignite coal ranging from two to eleven feet in thickness occurs comformably with the clay strata, and adjacent to this the best fire clays are found. The strata are regular

[1]'Clay Industry in California,' Preliminary Report No. 7, January, 1920, California State Mining Bureau.

Photo No. 1. Southwest wall of the Main Pit of the Alberhill Coal and Clay Company. The heavy stratum of clay directly behind the bunker is Main Tunnel Fire Clay. In the background, Plant No. 4 of the Los Angeles Pressed Brick Company, which draws clay direct from the Alberhill pits.

and persistent, and dip to the southwest with an average value of 10 degrees, with local variations due to an undulatory or wavy folding.

Minor local disturbances appear to have prevailed at intervals during deposition of these clays, and coarse sandy beds are interspersed with fine-grained plastic clays. In these sandy beds, the coarse silica sand is often intermixed in a sporadic and irregular fashion with the accompanying clay substance. Mottled clays apparently due to simultaneous deposition of different kinds of sediments derived from separate sources are also found. The beds in general seem to indicate that long quiescent periods during which fine grained clays were laid down were preceded and followed by stormy periods when frequent freshets or strong tidal currents brought in coarse silica sand and granitic debris from surrounding highlands. The top soils of the region consist of debris of disintegrated granite, and vary from a few inches to many feet in thickness.

Photo No. 2. Looking into the Main Pit of the Alberhill Coal and Clay Company from the West Pit. The pit walls here shown range up to sixty feet or more in height, all clay.

Extent and Commercial Development.

Owing to the masking of the surface by the layer of disintegrated granitic material, the total extent of the Alberhill deposit has not yet been fully determined. However, a large number of bore holes have been put down on widely separated portions of the property, and in every case clays of good quality were found to the full extent of the hole in depth. From this and other evidence, it seems quite probable that the entire mass of the small mountain, above the valley floor and for an unknown depth below, is clay. A few isolated occurrences of shale have been noted. Exploration to date has been sufficient to indicate beyond doubt that the quantity of readily available clay is so vast as to be inexhaustible for all practical purposes, and this fact, in combination with the good quality of the clays, makes the deposit one of great commercial importance. The hill comprising the deposit is about two and one-quarter miles long and one mile in width, with an average

elevation of 1680 feet. The main line tracks of the railway skirting the hill are at an elevation of about 1277 feet, so that the enormous tonnages awaiting development by simple gravity processes are evident. The present pits are all somewhat above the level of the railroad tracks.

Up to the year 1895 the Alberhill Coal and Clay Company operated the property principally as a coal mine, extracting and marketing the lignite coal previously mentioned as occurring with the clays. From that year onward, however, the sales of clay rapidly increased, and very soon completely overshadowed the coal in importance. At the present time the coal is mined only for local and special uses, but there is a large tonnage available and merely awaiting modern practice in the way of distillation or use as powdered fuel.

A small trainload of clay leaves the Alberhill pits each working day for distribution to the southern California clay-working plants, and the production for the year 1922 reached a total of approximately 2500 car-

Photo No. 3. Notch connecting Main and West Pits, Alberhill Coal and Clay Company. Plant No. 4 of the Los Angeles Pressed Brick Company in the background.

loads. The clays enter into the manufacture of a great diversity of products, ranging from china to coarse wares such as sewer pipe and hollow tile. The production of high grade face brick made from these clays reaches very large proportions, and these may be seen in numerous buildings throughout the towns of southern California, and to some extent in neighboring states. Fire brick and refractories to the number of several millions annually are made from the fire clays supplied by the company. It is probable that these two lines account for the greater part of the total tonnage produced. A large modern plant which draws its clays direct from the Alberhill pits is operated at Alberhill by the Los Angeles Pressed Brick Company, and it seems probable that the commercial advantages of a location directly at the source of raw material will result in bringing additional plants in future. At present most of the plants to which clay is supplied are located in the Los Angeles industrial districts.

Among manufactured products for which Alberhill clays have been extensively used in recent years may be mentioned the following:

Fire brick	Flue lining
Special refractories	Yellow bowls
Electric furnace refractories	Floor tile
Face brick	Faience tile
Pressed brick	Art tile
Enameled brick	Hollow tile
Architectural terra cotta	Roofing tile
Garden terra cotta	Sewer pipe
Art pottery	Stoneware
Chinaware	Chemical stoneware
Electrical conduit	Saggers
Drain tile	

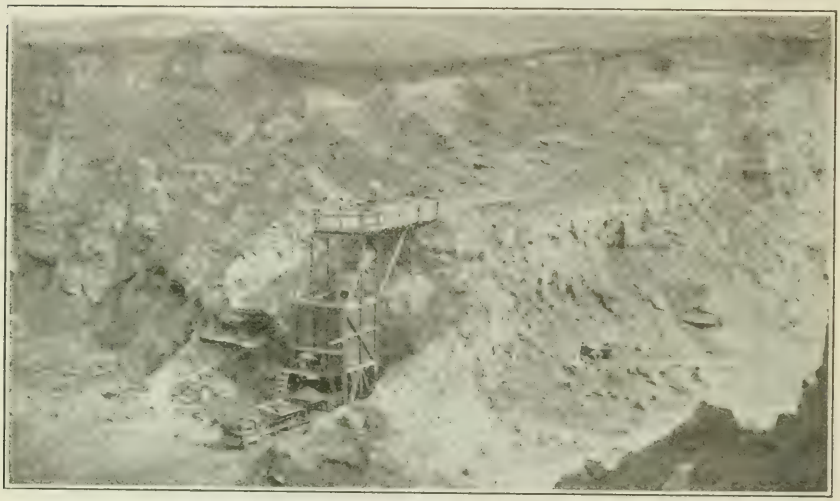


Photo No. 4. Stripping operations at the junction of the Main and West Pits, Alberhill Coal and Clay Company.

The Alberhill deposit, by reason of its operation over many years and the large production now attained, has undergone an extensive commercial development. Several pits are actively worked, of which the Main Pit and the West Pit are the most important. These pits have furnished thousands of carloads of clay, and are now very large excavations, though merely insignificant nicks in one flank of the hill when compared with its total bulk. Several tunnels have been driven into the deposit, the "West Tunnel" having a length of over 1000 feet in its main extent, with many side branches and feeders leading off at intervals. This tunnel is of large bore, heavily timbered, and electric lighted and equipped with mine tracks throughout for transfer of two-ton cars. No surface waters are permitted to enter, so that the tunnel remains dry and workable the year round. For general production purposes a complete equipment of tracks, mine cars, gasoline locomotives, trucks, wagons, mining machinery and tools, blacksmith shop, machine shop, bunk houses, workmen's and foremen's cottages, board-

Photo No. 5. Making up the daily clay train at Alberhill, from the Clay Mines of the Alberhill Coal and Clay Company.

ing house, water supply plant, and general store is maintained by the company. Extensive plans for the future of the town of Alberhill are under way, looking toward its development into a model industrial community. Trees are being planted, and the townsite graded and leveled by filling hollows and ravines with the stripping produced in the mining operations, preparatory to the laying out of a carefully landscaped industrial town by architects competent to make the best of its natural features, both for beauty and utility. The general plan of the company is that the community shall not be permitted to develop in a haphazard and unsightly way, and that it shall ultimately constitute an industrial town pleasant both to live in and to work in. Large

Photo No. 6. One of the loading trestles, Alberhill Coal and Clay Company.

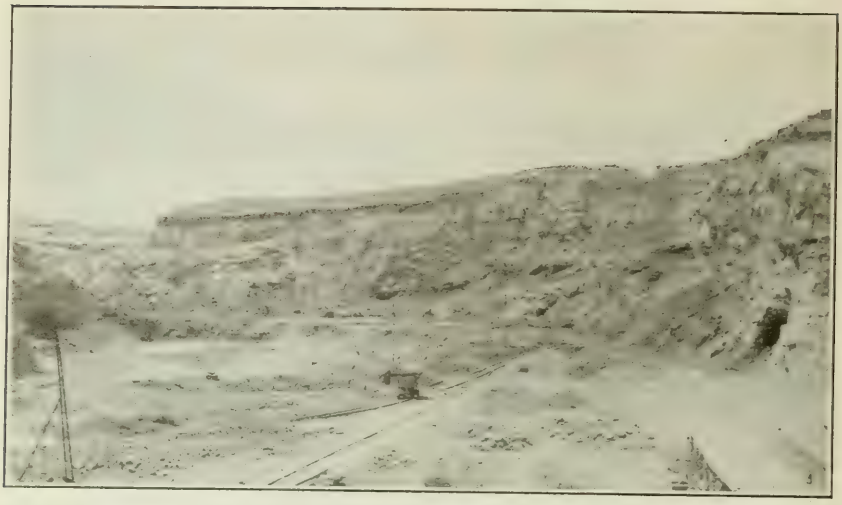


Photo No. 7. Looking into the Main Pit of the Alberhill Coal and Clay Company. Upper West Pit workings visible at extreme upper left.

Photo No. 8. Upper West Pit workings of the Alberhill Coal and Clay Company. This entire region is honey-combed with glory holes extending down to the West Tunnel and its off-shoots, 30 to 60 feet below.

parcels of favorably located land have been set aside as plant sites for future clay industries, and a nine-hole golf course has been completed and is maintained for the use of employees and the public generally.

Methods of Mining.

The general method of mining the Alberhill clays is by the usual open-pit workings. The clays are, for the most part, rather densely compacted and stand well in vertical banks. The faces of these banks are blasted down and the clay loaded into two-ton steel mine cars or trucks, to proceed directly to adjacent loading trestles over the switch lines entering the pits from the main tracks. Clays from the higher levels are shot down chutes into elevated bunkers, where convenient or desirable, under which trucks or mine cars may be run, and loaded by opening a discharge gate.

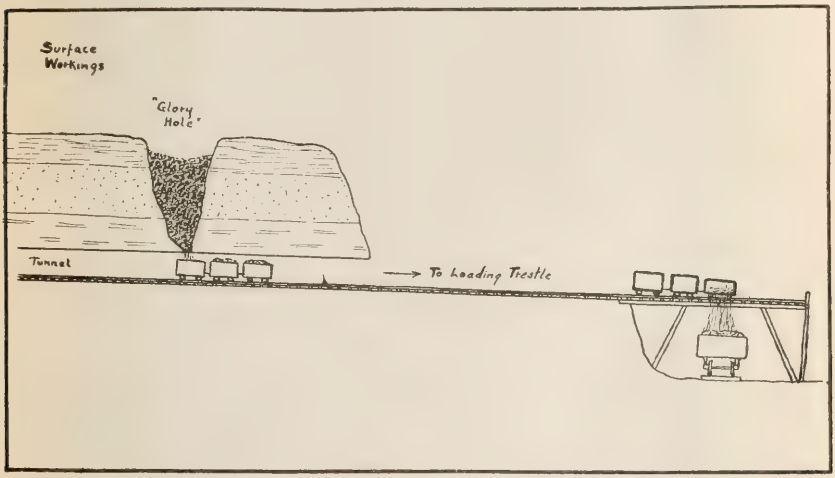


Plate 2. Handling and storage of clay by "glory hole" method.

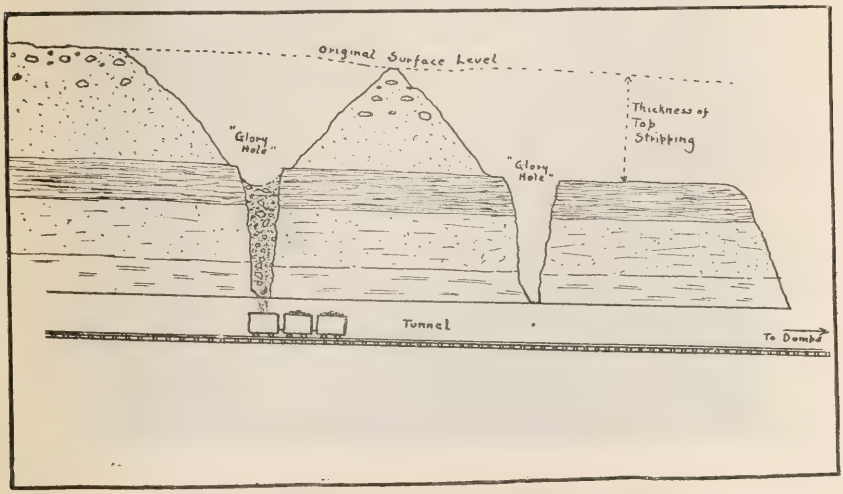


Plate 3. Stripping by glory hole and tunnel method.

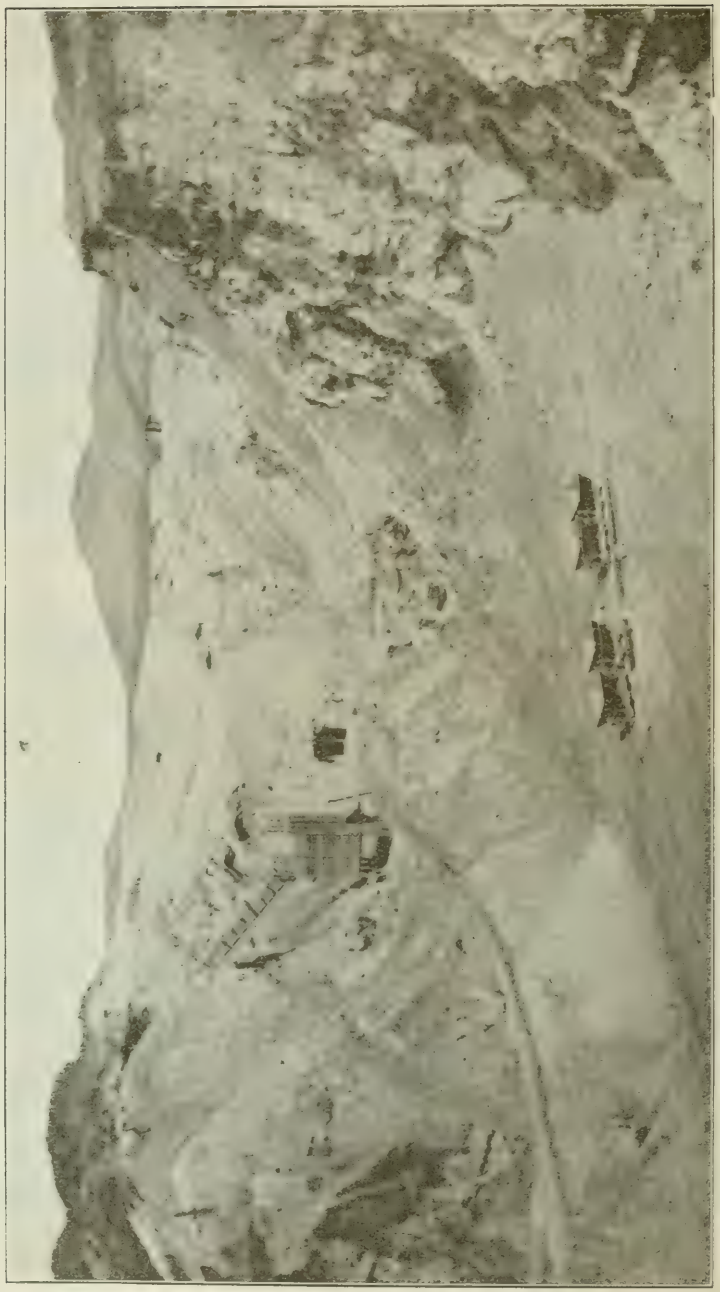


Photo No. 9. Lower portion of the West Pit of the Alberhill Coal and Clay Company. Near the bunker is seen the mouth of the West Tunnel, which extends back under the upper workings to the West Pit for over 1000 feet, connecting to the surface by numerous glory holes for storing and handling the clay.

Photo No. 10. Upper West Pit of the Alberhill Coal and Clay Company. One of the glory holes connecting with the West Tunnel, 50 feet below the surface.

In the 'West Pit' region a variation of the ordinary methods is extensively employed, as indicated by the accompanying diagram. The entire upper portion of the 'West Pit' region is underlain by the 'West Tunnel' and its offshoots, the tunnel roughly paralleling the longitudinal extent of the surface workings, and being from 30 to 60 feet below them. Large 'glory holes' extend from the surface workings down to the tunnel at frequent intervals, their lower ends closed by gates or valves for controlling discharge of the clay. The clays are mined in the usual way in the open workings above, and dumped into adjacent glory holes from which they are drawn off into cars on the tunnel tracks below as needed, to proceed thence to the loading trestles in the usual way. This system has been found economical and convenient, especially so as each glory hole constitutes a storage bin for two carloads (100 tons) of clay or more. A similar system is sometimes employed for stripping the clay strata of top soils and granitic debris, where tunnels have been driven beneath the area to be developed. (See accompanying diagram, Plate 3.) By this method a great funnel of the loosely compacted stripping can be very quickly cascaded down the glory hole, to be carried away to dumps by the mine cars which receive it on the tunnel tracks below.

In addition to the above processes, a considerable amount of underground work is always proceeding in conjunction with further development and extension of the tunnels themselves.

Geological Section of the Alberhill Deposit.

For convenience in discussing the different varieties of clays marketed, and as a means of indicating their geological horizon and method of occurrence, the accompanying geological section of the Alberhill deposit is given. This section is, of course, merely diagrammatic, and somewhat simplified to represent *average* or general conditions, since each locality shows small variations and departures from what may

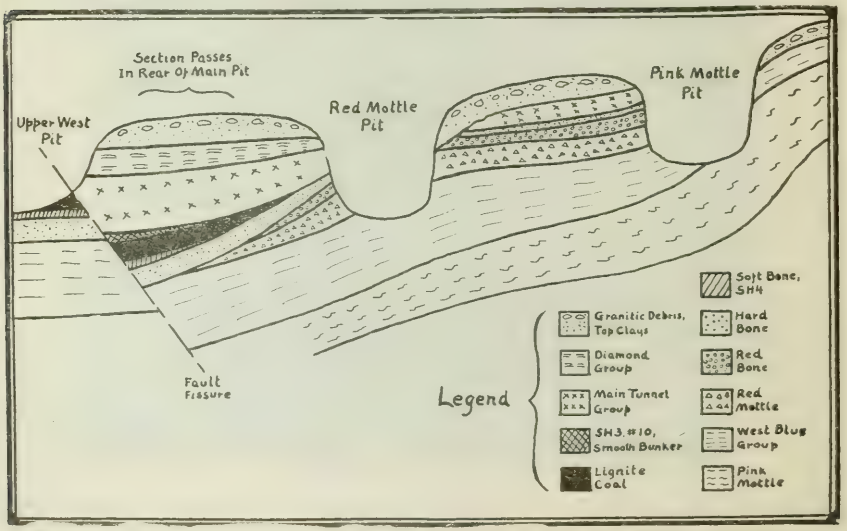


Plate 4. Diagrammatic section of strata at Alberhill, in a general west-east line.

be considered the normal. Certain clays may be much thicker bedded in one region than in another, and some grades of clay which constitute a characteristic variation of their stratum may be developed only in particular areas. The attempt has been, therefore, to present a diagrammatic representation of the complete sequence of beds, so that their relation may be grasped at a glance.

Photo No. 11. Stripping operations of the Alberhill Coal and Clay Company. Rear wall of Main Pit visible in background.

Each stratum or 'group' here shown represents as nearly as possible, a geological period during which the conditions of deposition were essentially uniform. The clays mined from any given stratum show a noticeable similarity in character and a relationship to each other, though they may be commercially graded into two or three varieties. On passing to another stratum or group, a pronounced change in the general character of the clay is noted. The fault, or slip, noted as

occurring near the east side of the 'West Pit' is not of great consequence, being only two or three hundred yards long and with a maximum down-throw of thirty feet or so. The continuation of any bed is readily picked up on crossing it.

Individual Clays.

More than thirty varieties and grades of clay are mined and marketed by the Alberhill Coal and Clay Company, among which those suited to almost any branch of the clay-working industry may be selected. There are, however, a number of these clays which, by reason of their wide usefulness and extensive commercial employment, are specially important. Brief notations regarding the character and uses of these clays follow. The clays are designated by the name under which marketed.

SH4 BALL CLAY.

This is a clean clay of very high plasticity, possessing great bonding or 'carrying' power in the plastic state. It has proven very useful in a great variety of mixes with less plastic grades, in the way of imparting improved color and working quality to the mix. SH4 clay is considerably more refractory than English ball clays, and burns to a much whiter color, approaching washed English China clay in this regard. It is not safe burning alone, but works excellently in proper combination with other clays, and has many valuable qualities. The accompanying analysis indicates its average composition:

Analysis of SH4 Ball Clay.	Per cent
Silica	47.08
Alumina	33.36
Iron oxide	.96
Lime	.66
Magnesia	Trace
Sodium and potassium oxides	.13
Moisture, 105 degrees C.	3.98
Combined water and volatiles	12.88
Titanium oxide	1.38
Manganese oxide	Trace
Chlorine	None
Sulphuric anhydride	None
Nitric anhydride	None
Phosphoric anhydride	None
	100.43

*Analysis by Smith Emery Company, Los Angeles, Cal. Some of the samples of this clay analyzed have shown a content of iron oxide up to 1.9 per cent, but in such cases the titanium seems always to run low, so that the total percentage of coloring matter remains approximately constant.

As mined, SH4 is dark gray in color, and a dry lump placed in water will flake down and disintegrate within less than one minute. The resulting flaky material, when worked and kneaded, becomes exceedingly plastic. This clay has been used in the manufacture of china, porcelain, refractories, pottery, and many other wares where a very plastic clay is needed to carry less plastic materials, and a good white color is particularly desired.

SH3 CLAY.

This is a white-burning clay locally developed directly over the lignite coal bed. It is light gray in color, breaks down readily in water, and works up to a condition of good plasticity, though it has not as great bonding power as SH4. In burned color it is not quite so white as SH4, but it is much safer in drying and burning, and has considerably less shrinkage. It is fairly refractory in character, but burns to a strong body at very moderate heats. It might be mentioned here that all the Alberhill clays, even the red-burning varieties, possess an unusually long heat range, and are safe from over or under burning.

SH3 in proper combinations has proved excellent for the manufacture of faience tile, garden terra cotta, face brick, enameled brick, building terra cotta, saggers, and similar products. Recent experiments in washing the clay seem to indicate that its color may be sufficiently improved by this process to allow of its use in china and porcelain bodies in larger quantity than has heretofore been considered permissible. The following analysis indicates the general character of the clay as mined:

Analysis of SH3 Clay.	Per cent
Silica	63.00
Alumina	23.83
Iron oxide	1.28
Lime	.76
Magnesium oxide	None
Sodium and potassium oxides	.56
Moisture, 105 degrees C.	1.18
Combined water and volatiles	8.68
Titanium oxide	.89
Manganese oxide	None
Chlorine	None
Sulphuric anhydride	None
Nitric anhydride	None
Phosphoric anhydride	Trace
	100.18

*Analysis by Smith Emery Company, Los Angeles, Cal.

No. 10 CLAY.

This clay somewhat resembles SH3 in general performance, and is suited for similar purposes. It carries a little more silica sand than SH3, and is also more carbonaceous, and generally not so densely compacted. The color of the raw clay is generally dark gray, due to carbonaceous matter. No. 10 clay has good plasticity, burns white or grayish white, is fairly refractory, and produces a strong body at moderate heats. It is a much safer clay than SH4, and has less shrinkage, but is not quite so white-burning.

No. 10 clay has been very extensively used in the manufacture of face brick, faience tile, terra cotta, and similar products. In composition it does not differ greatly from SH3, but generally shows a slightly higher proportion of silica as compared with alumina, and a higher percentage of volatiles due to the carbonaceous matter.

MAIN TUNNEL FIRE CLAY.

This clay is commercially one of the most important produced at Alberhill, in view of its very extensive use in the manufacture of fire brick and refractories generally. It occurs in enormous quantities, the bed being often twenty feet or more in thickness. In character it is a

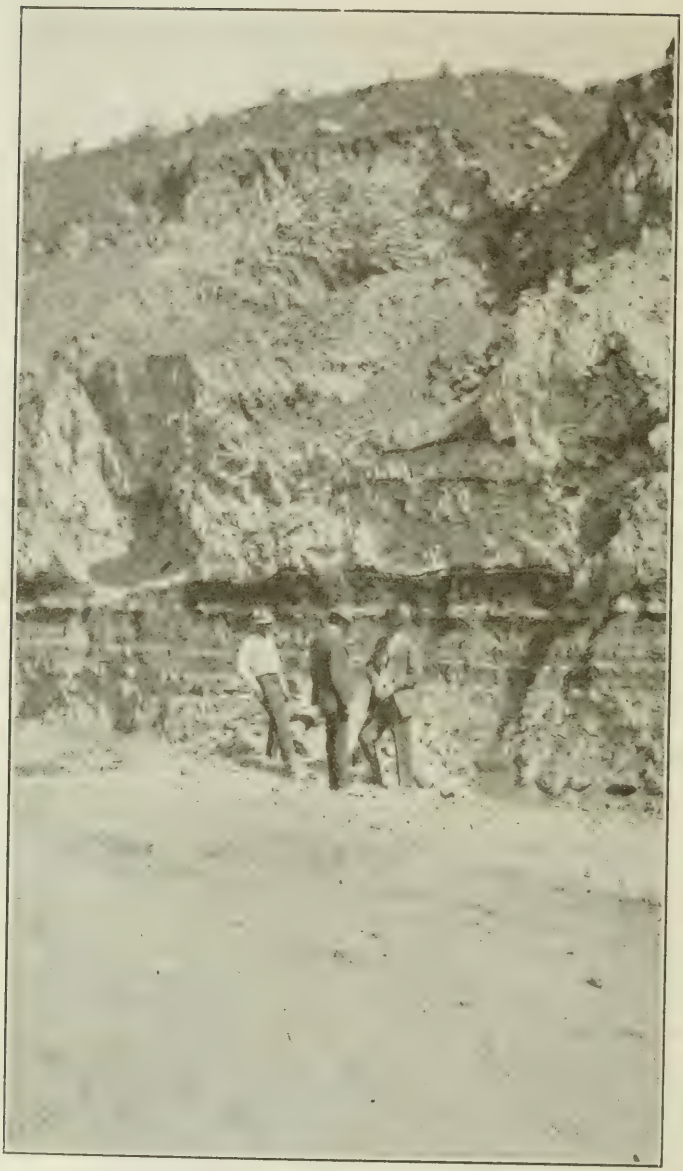


Photo No. 12. Clay mines of the Alberhill Coal and Clay Company. An exposure of the lignite coal. The clay stratum directly below the coal is SH4; that directly above is SH3 Clay.

siliceous fire clay and it is customarily graded into three varieties for marketing—'Main Tunnel,' 'Select Main Tunnel,' and 'Extra-Select Main Tunnel.' These varieties do not differ greatly in refractory quality, the grading being on the basis of the amount of coarse silica sand of which the 'Main Tunnel' carries a large amount, the 'Extra-Select' practically none. Analyses of the 'Main Tunnel' and 'Select Main Tunnel' grades are given below. The alumina-silica variation is due to the lesser proportion of coarse silica sand in the 'Select' grade, and a similar though much less marked difference exists between the 'Select' and 'Extra-Select.'

	'Main Tunnel' Clay Per cent	*'Select Main Tunnel' Clay Per cent
Silica	75.46	59.44
Alumina	16.22	26.28
Iron oxide	2.24	2.24
Lime	.03	.26
Magnesia	Trace	.20
Alkalies	.20	.15
Ignition loss	6.24	11.64
	100.39	100.21

*Analysis by Smith Emery Company, Los Angeles, Cal.

The 'Main Tunnel' Fire Clays are gray in color, and quite dense and hard as mined, but break down readily in water and work up to a condition of good plasticity. They will carry a considerable proportion of grog where this is desirable, and possess a self-lubricating property that makes them work well from a die. In refractory qualities they have proved excellent, and several million fire brick and special refractories of one sort or another are made from them yearly in the Los Angeles district. These clays are all very safe in drying and burning, and find also a considerable field outside the line of refractories. The 'Select' grade is extensively used as a sagger clay, in combination with one or another of the red-burning clays mined at Alberhill, and such saggers are reported by a prominent eastern manufacturer to show about five times the life of his eastern saggers, under similar conditions.

SMOOTH BUNKER CLAY.

This is a white-burning clay carrying a considerable proportion of coarse silica sand. Owing to its low shrinkage and exceptionally safe drying and burning qualities, it has been rather extensively used for a wide variety of products, notably face brick and refractories, flue linings, and hollow tile mixes. Smooth Bunker has very fair plasticity, especially considering the amount of natural grog carried by it in the form of coarse silica sand, and it is readily workable. It breaks down in water without difficulty, and works up plastic at once.

'BONE CLAY.'

This clay shows an alumina content ranging up as high as 48 per cent in certain varieties, and is one of the most peculiar and unusual clays mined at Alberhill. It is being used at present for special purposes where its peculiar composition makes it of value, notably for the production of electrically fused refractories of the highest grade, and for high-alumina fire brick. It will probably be in much more general demand later, as its valuable qualities become better understood.

Photo No. 13. Rear wall of the Main Pit of the A'berhill Coal and Clay Company. Main Tunnel Fire Clay is being mined.

The 'Bone' clays occur in two varieties, 'Hard Bone' and 'Soft Bone.' The 'Soft Bone' occurs directly under the lignite coal in certain localities, and is a loosely compacted clay having an ashy appearance. It breaks down slowly in water, and has only a low degree of plasticity unless finely ground by some mechanical process, when a considerably increased plasticity is developed. The Soft Bone appears to run somewhat higher than the Hard Bone in alumina, usually, and is highly refractory in character.

The 'Hard Bone' occurs directly under the Soft Bone, the two often merging imperceptibly. This variety is dense and hard, and shows small spherules or 'eyes' of dark colored material scattered throughout the ground mass of the clay. It was at first supposed that these consisted of highly aluminous material in the nature of gibbsite or diaspore, but later investigation seems to indicate that the alumina is carried by the ground-mass of the clay substance, and that the dark spots are merely in the nature of segregations of ferruginous matter.

A dry lump of Hard Bone, when placed in water, will rapidly crack down into a loose mass of small, sharp-edged fragments, which show no further softening even on prolonged soaking. The resulting mass of fragments is sandy and noncoherent, with no appreciable plasticity. If, however, the grains are strongly worked, or crushed to fine mesh, a surprising degree of plasticity is developed, and particularly an extremely 'sticky' quality, the clay adhering so strongly to a knife blade or mortar pestle that it is washed or scraped off with difficulty.

The Bone clays, as mined, burn to a grayish-white body, considerably check-cracked, and having a dull ring. They are exceptionally well suited for the manufacture of high-alumina refractories, and are already extensively used for such purposes, and for the special electrically fused refractories previously mentioned. Experimentation along the line of refining these clays by washing, etc., has shown that a fine plastic white-burning material can be obtained, and it is probable that this will ultimately be produced for use in porcelains and china. The accompanying analysis indicates the general composition of the Bone clays. The alumina content varies somewhat according to the locality in which the clay is developed.

Analysis of Bone Clay.	Per cent
Silica	44.22
Alumina	39.52
Iron oxide	2.08
Titanium oxide	1.50
Lime	.39
Magnesia	Trace
Sodium and potassium oxides	Trace
Chlorine	.02
Sulphuric anhydride	None
Carbon dioxide	Trace
Moisture, 105 degrees C.	.30
Combined H_2O and volatiles	12.10
	100.13

*Analysis by Smith Emery Company, Los Angeles, Cal.

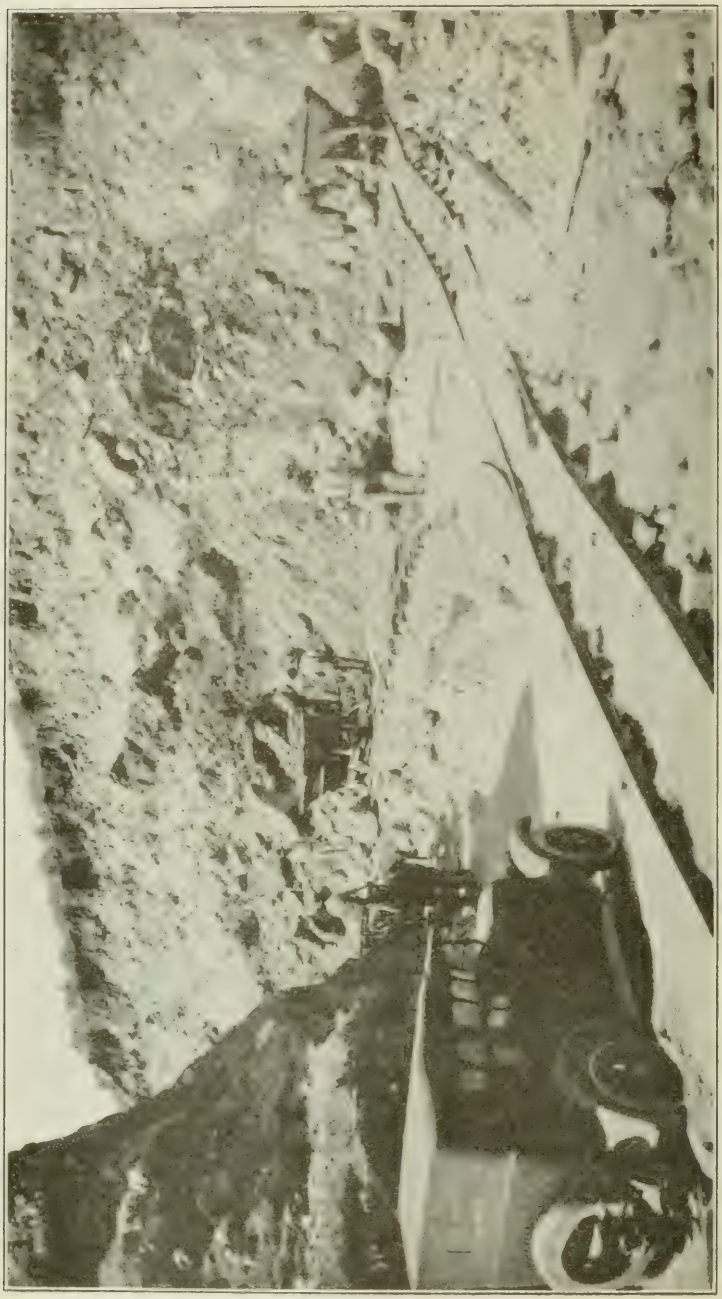


Photo No. 14. A portion of the Hill Blue Pit of the Alberhill Coal and Clay Company. In addition to Hill Blue Clay, another variety, known as Hill Blue-Green, is mined in this pit from the stratum overlying the Hill Blue.

HILL BLUE CLAY.

This clay is one of the most widely used clays mined at Alberhill, by reason of its clean character, high plasticity, and safe drying and burning character. It has many of the qualities of a good ball clay, with much safer burning and drying qualities than usual in a clay of such high plasticity, and less shrinkage. It is extensively employed as a bond clay, and for helping the plastic working qualities of mixes in a wide variety of products.

Hill Blue is an excellent sagger clay, and will carry with ease 50 per cent of grog, or large proportions of less plastic clays. Among the important uses for which it is suited, in correct combination with other Alberhill clays, are faience tile bodies, terra cotta, face brick, enameled brick, yellow bowls, garden terra cotta, pottery, stone ware, and similar products. In fact, Hill Blue is a useful clay in almost any mix where extreme whiteness is not a requisite. Very large single pieces of garden terra cotta, such as vases up to seven feet in height and of large diameter, are made from mixes of Alberhill clays in which Hill Blue is a main constituent, and these habitually come from the kilns without a single crack or check.

Hill Blue burns to a creamy color, the color darkening somewhat at high temperatures. It breaks down without difficulty, though a little more slowly, in water, than the majority of the Alberhill clays, owing to its very plastic character. Like the other Alberhill clays, it has a long heat range, and produces very strong bodies from Cone 1 or less to well above Cone 10. At Cone 9 the body is very hard and dense, but not quite vitreous, and the shrinkage only one in nine or one in ten. The accompanying analyses indicate its general composition.

Analyses of Hill Blue Clay.	Per cent	Per cent
Silica	57.48	53.92
Alumina	23.39	25.57
Iron oxide	2.55	3.83
Lime	.89	1.29
Magnesia	.48	.59
Sodium oxide	.54	.55
Potassium oxide	.51	.40
Sulphur trioxide	.08	.28
Moisture, 105 degrees C.	5.23	3.00
Loss on ignition	8.61	

*Analyses by Raymond G. Osborne, Los Angeles, Cal.

WEST BLUE CLAY.

SELECT WEST BLUE CLAY.

These two clays are commercial varieties derived from the same bed, the 'Select' grade being a somewhat cleaner variety. Both are somewhat less plastic and carry more sandy matter than Hill Blue, but this does not seem to interfere with their usefulness to any appreciable degree, and these clays rival Hill Blue in their extensive application and general usefulness. The stratum in which they occur is one of the thickest and most massive found at Alberhill.

Either of these clays, when slipped, screened, and treated with electrolyte in the usual way, makes a perfect natural casting mix without addition of any other constituent. Pottery made in this way burns to

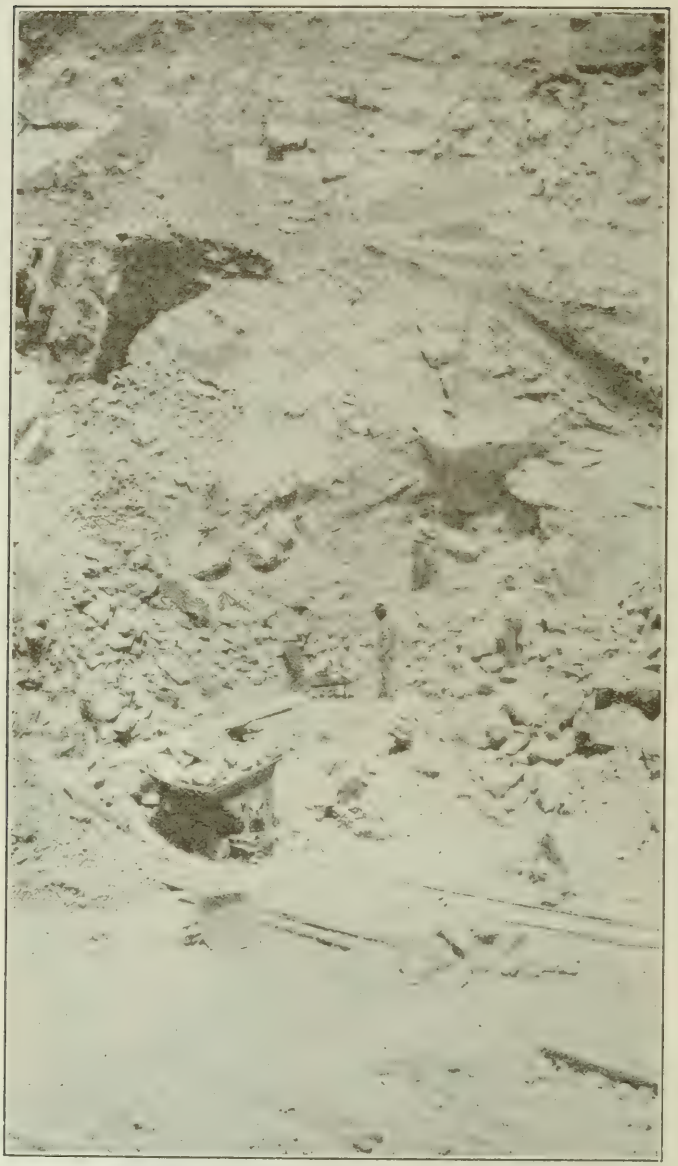


Photo No. 15. Mining Select West Blue Clay, Lower West Pit of the Alberhill Coal and Clay Company. The massive character of the bed is evident. Everything shown here is marketable clay. Hard Bone Clay overlies the Select West Blue at this point.

a strong porous body at ordinary heats, the color being creamy or buff depending on the character of the fire, degree of heat, etc. The great field for the use of these clays, however, at present lies in such products as face brick, terra cotta, electrical conduit, ladle brick, roof tile, hollow tile, etc. The raw clays, up to Cone 9 or beyond, burn to a tight body of creamy color, with appearance of a black speckle at the higher temperatures.

D.C. CLAY.

This material is that previously mentioned as yielding a china clay on washing in the usual way. The crude clay consists of a fairly plastic clay substance carrying a large proportion of sandy and shaly detritus. In washing, a separation of about 50 per cent of fine smooth clay substance is obtained, depending somewhat on the extent to which the refining process is carried. The crude D.C. Clay, burned at Cone 9 or above, produces a white body with an intense black speckle, closely resembling the manganese speckle gray brick so widely marketed. These black specks are due to the shaly or granitic material of the crude clay, and it seems probable that the residue obtained from washing will make an excellent substitute for the manganese commonly employed to produce the black speckle in gray brick.

Following the usual washing process and separation of this sandy material, a china clay equal in plasticity to most grades of English china clay is obtained. The burned color at Cone 9 or above is not so good as that of the English clays, but further experimentation in refining seems to indicate that the burned color may be considerably improved by better methods of washing, and it is believed that a china clay applicable to the customary uses of the English clays will be obtained eventually. The washed D.C. Clay so far produced shows much promise, as it has valuable qualities in the way of promoting quick draining, safety, and readiness in freeing from the mold to casting slips, and its plasticity allows of easy jiggering and general working in the plastic state. It is a very safe material, and its shrinkage is less than that of the usual English china clay. The following analysis indicates the composition of the washed material.

Analysis of Washed D.C. Clay.	Per cent
Silica	48.18
Alumina	35.99
Iron oxide	1.74
Lime	.48
Magnesia	.55
Alkalies (sodium and potassium oxide)	2.03
Loss on ignition	11.22
	99.99

*Analysis by The Western Precipitation Company, Los Angeles, Cal.

RED-BURNING CLAYS.

A number of red-burning clays of good quality are produced at Alberhill, among which only the more important will be mentioned here. The Alberhill red clays, as a class, are unusually refractory, many of them enduring Cone 9 without destructive over-burning. They have in consequence a long heat range conducive to safety in the kiln.

RED MOTTLE CLAY.

This is a plastic clay of blood-red color or salmon-red color in the raw state, more or less mottled with white. It burns to a fine red color, and is suited for quarry tile, roof tile, red and flashed brick, sewer pipe, and red wares generally. Red Mottle clay breaks down at once in water, and works medium plastic. In quality it is fine-grained, clean, and smooth. At Cone 3 the body is dense and hard, with practically no adherence to the tongue, shrinkage plastic to Cone 3, 1 in 6½, color a fine red.

PINK MOTTLE CLAY.

This clay is uniquely beautiful in its natural state, as it consists of a fine wavy mottling of red, blue, white, lavendar, and purple sediments, resembling a fine variegated marble. It breaks down at once in water, and works up to a state of medium plasticity, but its burned color is not so good as that of the Red Mottle. Pink Mottle, unlike most of the Alberhill red clays, is overburned to a destructive degree at Cone 9. At Cone 3 the body is dense and hard, with little adherence to the tongue, shrinkage plastic to Cone 3, 1 in 10, color a fair red, but would be improved by addition of barium carbonate in the usual way. Owing to its low shrinkage, Pink Mottle is a useful clay in combination with red-burning clays of high shrinkage but otherwise desirable quality. It is a very useful clay for such products as sewer pipe, hollow tile, paving brick, and red wares generally, where the finest color is not required, and may be added in considerable quantity to mixes for fine red wares also, where a clay-like red mottle is used to give the desired color to the product. The following analysis indicates the general composition of Pink Mottle.

Analysis of Pink Mottle Clay.	Per cent
Silica	68.00
Alumina	15.07
Iron oxide	7.69
Titanium oxide	.96
Lime	None
Magnesia	Trace
Alkalies (sodium and potassium oxide)	2.68
Moisture, 105 degrees C	.60
Combined water and volatiles	4.65
Chlorine	.13
Sulphuric anhydride	None
Phosphoric anhydride	Trace
Manganese oxide	Trace
	99.78

*Analysis by Smith Emery Company, Los Angeles, Cal.

RED BONE CLAY.

As the name indicates, this clay is a reddish variety of the bone clays previously mentioned, and it exhibits many of their peculiarities, particularly in its behavior when wetted. It breaks down, like the white bone, into an aggregation of angular fragments which do not soften appreciably unless strongly worked or crushed. Red Bone is a refractory clay, enduring Cone 9 without difficulty, and has proved a useful 'back-bone' clay in sewer-pipe mixes. It can be used to advantage in mixes for the production of fine red and flashed brick and gun-metal

brick, but its most important use so far has been for saggers. Combined with certain other Alberhill clays, it gives an exceptionally durable sagger, and it is utilized for that purpose to an extensive degree.

WEST YELLOW CLAY.

This clay is of a rather low-heat character, compared with most of the Alberhill red clays, being nearly vitreous at Cone 3. The burned color is a bright red, not quite so good as that of Red Mottle. At Cone 9 the body shows attractive flashings of purple and gun-metal shades. While West Yellow has only moderate plasticity, it acts like a ball clay in drying, being slow to dry and tending to warp. It is unsafe in burning, and requires to be mixed with other safe clays, but it is a useful clay in a variety of products, especially fine red and flashed brick, quarry tile, sewer pipe, roof tile, and sagger mixes where it is desired to tighten the burned sagger somewhat. This clay breaks down somewhat slowly in water.

HILL BLUE GREEN.

Hill Blue Green is chiefly valuable for its plasticity, vitrifying qualities, and attractive flashed color at higher temperatures. It is very unsafe alone and must be used sparingly with safer clays. It is adaptable to mixes for the production of roof tile, sewer pipe, quarry tile, red and flashed brick, and paving or sewer brick. It breaks down somewhat slowly, but without difficulty, in water.

WEST TUNNEL BLUE.

This clay is not so attractive as Red Mottle or West Yellow in burned color, but possesses a valuable quality in that it dries to an exceptionally strong body in the 'green' state. It is therefore a useful clay in sagger mixtures where it is desired to add to the strength of the dry sagger before burning, so that it may be handled safely, and also to tighten the burned body somewhat. It is a clay of only moderate plasticity, and carries a considerable amount of shaly and sandy material. The shrinkage is low—1 in 10, plastic to Cone 3—and it is a safe clay advantageous to mix with the fatter clays. West Tunnel Blue is useful in sewer pipe, red and flashed brick, roof tile, and hollow tile mixes. The following analysis indicates its general composition.

Analysis of West Tunnel Blue.	Per cent
Silica	55.08
Alumina	15.50
Iron oxide	9.80
Titanium oxide	1.04
Lime	1.40
Magnesia	2.40
Alkalies (sodium and potassium oxide)	1.04
Moisture, 105 degrees C.	5.62
Combined water and volatiles	8.08
Chlorine	.07
Sulphuric anhydride	None
Phosphoric anhydride	.20
Manganese oxide	Trace
	100.23

*Analysis by Smith Emery Company, Los Angeles, Cal.

RED SHALE.

A large bed of this material is available at Alberhill, but has so far undergone no commercial development. It does not break down in water, and requires to be ground previous to use. Bricks made of this ground shale show a very fine red color, superior even to that of the Red Mottle Clay.

LIGNITE COAL.

A large tonnage of this material occurs at Alberhill in a bed ranging from 2 to 11 feet in thickness. The degree of consolidation varies considerably, some of the material approximating coal in character, while in other localities soft and loosely compacted varieties occur. At present the coal is not marketed in any considerable quantity, but it is probable that it will be a factor of importance in the future of Alberhill, since it comprises a large supply of cheap fuel exactly on the spot where fuel is necessary. Investigations into the possibility of distilling or bricketting this coal are now in progress, and its use as a powdered fuel does not appear to offer any great difficulties. A trial made along these lines showed that high temperatures were readily obtainable with the Alberhill coal as fuel. The accompanying analyses indicate the average values:

Alberhill Coal.	Per cent
Moisture	24.20
Volatile matter	47.67
Carbon	12.77
Ash	14.70
Sulphur	.66

Alberhill Lignite.	Per cent
Moisture	24.46
British thermal units, as received	7,870
British thermal units, dry basis	10,410

*Analysis by Smith Emery Company, Los Angeles, Cal.

[NOTE.—A comprehensive exhibit of the principal varieties of the above-described clays is on display in the Mineral Museum of the State Mining Bureau, San Francisco.—EDITOR.]

OIL SHALE IN SANTA BARBARA COUNTY, CALIFORNIA.

By F. D. Gore.[a]

Introduction.

California produces oil at the present time from natural resources in three different ways, namely:

1. Drilling and tapping underground reservoirs from which oil flows or is pumped.

2. Extraction, by means of solvents from bituminous rock.

3. Destructive distillation of oil shale.

The first method is, of course, the most important and California production of oil today equals about one-third that of the United States.

The second method is practically of no interest at the present time. While there are numerous deposits of bituminous rock easily accessible in California, the future of the industry depends entirely upon the market price of oil, as this process of extraction is comparatively costly.

The largest deposit of bituminous rock in the coast region of California is located about five miles south of San Luis Obispo. Wells in the Arroyo Grande Oil Field are producing a low gravity oil from this sandstone, commonly known as Pismo Formation.

There are other deposits of less importance distributed over a large area in Santa Barbara County, the locations of which are shown on Plate No. 1.[b] Some of these deposits have been mined years ago for the high grade of asphalt obtained.

There are at the present time two plants under construction for the recovery of oil from bituminous rock in San Luis Obispo County. A description of one of these plants is given in the California State Mining Bureau publication 'Mining in California' under date of June, 1922. The process is briefly as follows: The oil saturated sandstone is conveyed from the mine to the plant by a ground sluice which empties into a double screw log washer. From the log washer it passes through a Cottrel vibrating screen, which removes the gravel. From the vibrating screen the sand passes through three K and K mixers in parallel and from here the material flows to eight K and K flotation machines used as roughers. From the roughers the flotation oil concentrate is sent to four K and K flotation cleaning machines. From the cleaners the oil concentrate goes to two additional K and K cleaners and then to a Dorr thickener. From the thickener the concentrate is sent to a storage and settling tank. It is then ready to be refined.

There has not been sufficient progress made on the other plant to warrant a report at this time.

The third process is becoming more important as the oil obtained from the bituminous shale is peculiarly adapted to use as flotation oil, an oil used in the recovery of sulphide minerals in ores.

This paper deals primarily with the oil shale industry of Santa Barbara County, California, and sets forth the location of the deposits, geological conditions governing the occurrence of same and the description of the different processes now in operation.

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[a]F. D. Gore, Deputy Supervisor, District No. 3, Santa Maria, California.

[b]Plate No. 1—Areal map of oil shale deposits in Santa Barbara County.

Acknowledgements.

To Mr. G. W. Wallace, Consulting Engineer, and Mr. F. G. Green, Chemist, for the N. T. U. Company, the writer wishes to acknowledge his thanks for information concerning the different chemical analyses of shale oil.

To Dr. David T. Day, the writer is indebted for information concerning the Day Process of oil extraction.

A COMPARISON OF CALIFORNIA OIL SHALE TO OTHER SHALES.

The principal deposits of oil shale occur in Santa Barbara and Ventura counties, in and near the present producing oil fieds. The production of oil in the Santa Maria, Casmalia and Lompoc oil fields is obtained from this oil shale, commonly termed 'brown shale.'

The oil shale of California should not be confused with the shales of other parts of the United States and foreign countries, as it is different both physically and chemically. It is in a truer sense an oil-saturated diatomaceous shale from which oil may be extracted by the use of any of the well known solvents, such as benzol, chloroform, pyridine, et cetera.

Utah and Colorado shales are similar to the Scotch shales in the character of their Kerogen Content. New Brunswick shale, on the other hand, differs slightly in that it resembles a Torbanite. The shales of Indiana, Illinois and Kentucky vary considerably, some of the deposits resembling the Utah and Colorado deposit, with this exception: The oils produced as a result of destructive distillation contain a higher percentage of so-called tar acids (phenols and creosotes); in fact, shales are known in Illinois which yield oil similar in every respect to the low temperature distillation products from coal, containing, in some instances, as high as 30% tar acids. This indicates that some of these so-called shales are in reality a low grade Cannel coal.

The shales of Utah, Colorado and New Brunswick contain a solid bitumin which, when destructively distilled, yield an oil. This bituminous matter is insoluble in any of the well known solvents, and the oil is only obtained as a result of destructive distillation reactions.

The spent shale or residue from both the Colorado and Utah shales are largely silicates of one form or another, having a high aluminum content, whereas the California shale residue is high in silica.

PHYSICAL PROPERTIES OF DIFFERENT OIL SHALES.

Source	Moisture	Volatile material	Fixed carbon	Ash	Sulphur	Approximate percentage of extraction by solvents	Nitrogen
Nevada	2.4	29.3	4.2	64.4	4.	----------	.43
California	6.67	25.41	5.37	62.55	1.8	9–22	--------
Utah	.75	41.95	2.80	54.50	2.1	1.0	.60
Colorado	1.3	21.7	16.3	60.7	1.1	2.4	.70
Wyoming	.2	35.3		64.5	--------	1.75	.40
Kentucky	.7	28.6	0.7	70.0	3.8	.14	.60
New Brunswick	1.5	16.0	4.5	78.0	1.2	0.8–2.5	--------
Scotland	1.0	22.0	4.0	73.0	1.4	1.9–2.4	.5–.9
New South Wales Capertee	1.05	46.52	32.13	20.2	.35	.3	.3

Distillation Test on Sample of California Oil Shale near Casmalia.

By Smith, Emery and Company, Chemists and Chemical Engineers.

Initial boiling point ..... 212° F.
Water 0.5%
Oil distilled at 425° F. 0.8%—Spec. gr. ..... .8396—36.7° Baume

Distillation continued with steam, collecting the distillate in 10% fractions as follows:

	Fractions	Temperature	Specific gravity at 60° F.	Baume
1	(10%)	535° F.	.882	28.7°
2	(10%)	600° F.	.917	22.7°
3	(10%)	655° F.	.941	18.8°
4	(10%)	676° F.	.965	15.1°
5	(10%)	738° F.	.983	12.4°
6	(10%)	760° F.	.995	10.7°
7	(5%)	765° F.	1.005	(heavier than water)

The residue in the still-bottom consisted of a soft, asphaltic material, composing about 34 per cent of the original oil.

As the first two fractions of the steam distillate were very low in viscosity at ordinary temperatures, while the fractions 3 to 7 were somewhat viscous, the distillate was divided into these two portions and tested as follows:

	Fractions 1 and 2	Fractions 3 to 7 inclusive
Specific gravity at 60° F.	.906	.979
Baume	25.0°	13.0°
Flash	180° F.	285° F.
Cold test	Below −40° F.	+25° F.
Sulphur (S)	3.69%	4.47%
Nitrogen (N)	0.18%	0.31%
Unsaturated compounds	34.71%	50.39%
Viscosity, Saybolt at 100° F.	----------	124 seconds

REPORT OF ANALYSIS OF NEW BRUNSWICK SHALE AND BY-PRODUCTS—SEPTEMBER 24, 1921, BY F. G. GREEN, CHEMIST.

Initial B. P. 216° F.

Distillation Test of Oil Recovered (10% Fractions)

Sp. gr. Crude Shale Oil. 908

Acid loss	Fractions	Temperature	Sp. gr.	Flash p.	Burn	Cold test	Paraffin	Aromatics	Unsaturated hydro carb.	Nitrogeneous oils	Phenols	Saturates
28.4	10%	401	.787	32	46	.....	49.9	21.7	26.1	2.1	.2	71.6
28.2	20%	484	.826	108	117	.....	53.9	17.9	24.4	3.8	.6	71.8
35.8	30%	540	.854	160	176	.....	43.0	21.2	30.9	3.8	1.1	64.2
35.4	40%	604	.875	210	234	.....	37.5	27.1	29.9	4.3	1.2	64.6
40.0	50%	609	.884	148	218	.....	29.7	30.3	34.0	4.9	1.1	60.0
46.0	60%	625	.880	72	120	58	29.9	24.1	40.9	4.9	.8	54.0
50.6	70%	620	.888	60	116	44	32.8	17.6	46.6	3.8	.3	50.4
49.4	80%	634	.900	56	88	48	37.9	12.7	46.0	3.2	.2	50.6
49.7	90%	590	.926	62	114	50	42.0	8.3	46.7	2.7	.3	50.3

	Analysis of Shale	Analysis of Residue
Moisture	1.55	-----
Volatile matter	15.21	2.85
Fixed carbon	4.06	7.88
Ash	79.08	89.27
Sulphur	1.36	1.18
Nitrogen	-----	-----

Gas Analysis

CO_2	24.6
*Ill.	14.3
O_2	---
CO	12.1
CH_4	21.8
H_2	16.8
N_2	10.4

B.t.u., 593.5 per cu. ft.

Ammonium sulphate recovery—30 pounds per ton.
Sulphur in the oil—1.2%.

*Illuminants or such hydrocarbons as are heavier than methane.

REPORT OF ANALYSIS OF COLORADO SHALE AND BY-PRODUCTS, AUGUST, 1921.

Distillation Test of Oil Recovered.
(10% Fractions)

Initial B. P. 185° F. Sp. gr. Crude Shale Oil .912

Fractions	Temperature	Sp. gr.	Flash p.	Burn	Cold test	Acid loss
10%	388	782	----------	----------	----------	9.4
20%	459	829	99	120	----------	10.8
30%	523	864	159	170	----------	16.0
40%	590	892	208	237	----------	30.0
50%	629	906	232	264	44	28.0
60%	640	911	96	212	53	34.0
70%	590	875	58	98	52	22.0
80%	617	886	64	80	53	22.8
90%	685	903	63	86	55	36.2
92.2%	----------	950	52	64	87	13.5
End point	716	Loss, by volume 7.8%; by weight 1.32%.				

Ammonium sulphate recovery, 19.8 pounds per ton.

	Analysis of shale	Analysis of residue
Moisture	1.29	0.79
Volatile matter	21.72	0.95
Fixed carbon	16.31	7.10
Ash	60.68	91.16

Gas Analysis

CO_2	7.5
*Ill.	3.1
O_2	.0
CO	5.0
CH_4	32.0
H_2	41.9
N_2	10.5

B.t.u. per cu. ft., 561.

*Illuminants or such hydrocarbons as are heavier than methane.

Location of Deposits.

The areal map shows the location of the principal deposits. The data necessary for platting the different deposits was obtained by a careful survey of the different structures in and near the oil fields of Santa Barbara County, and by a study of the logs of wells drilled in this area.

Geological Conditions Governing the Deposits of Oil Shale.

The larger beds of bituminous shale appear in the lower series of the Monterey shales of the middle Miocene period and are calcareous and flinty. Due to the highly fractured state of the beds caused by folding, a reservoir for the accumulation of oil is formed. These bodies of bituminous shale are overlain with the upper series of the Monterey shales and in places the Fernando and Terrace formations.

Wells in the Santa Maria field have penetrated these beds at an average depth of 2000 feet and in the Casmalia field at a depth of approximately 700 feet, gradually becoming shallower in a northwesterly direction along the Schuman Anticline until the base of the Monterey shale is exposed and the underlying Vaqueros formation outcrops.

The relation of the bituminous shale to the overlying formations depends entirely upon the porosity of the upper shale beds due to fracturing. There are portions of the anticline where sharp folding has caused fractured zones to extend from the main body of bituminous shale to the surface and it is here that the oil from below has migrated upward, impregnating the upper bodies of shales. At these locations not only are the shales saturated with oil, but all the seams and fissures

are filled with asphalt, due to the evaporation of the higher volatile substances in the crude oil. Such conditions exist at different points on the Schuman anticline, starting at the railroad cut at Schuman Station and following the anticline in a northwesterly direction to Corralitos Canyon.

Accessibility of Deposits.

The major portion of deposits which would justify exploitation are easily accessible by wagon roads and are an average distance of two miles air line from the railroad station of Schuman.

Overburden.

The amount of overburden varies considerably on all of the deposits. A general idea of the amount of overburden on one of the largest deposits may be obtained from a study of the contour map, Plate No. 2.[c] The data on overburden were obtained by digging pits until the brown shale was encountered. The overburden will offer no serious handicap during the mining of the shale, as all of the work may be open cut and can easily be stripped by steam shovels. The overburden consists of unproductive Monterey shale, overlain by a small deposit of silt and decomposed vegetable matter. This area is sparsely covered with scrub oak bushes and brush.

History of Early Operations.

Since 1900 several attempts have been made to mine the asphalt deposits of this area and it is reported that the operations were profitable, as a high grade asphalt was obtained, but in later years the oil industry and the manufacture of asphalt brought the price so low that the asphalt mines mentioned herein had to be abandoned.

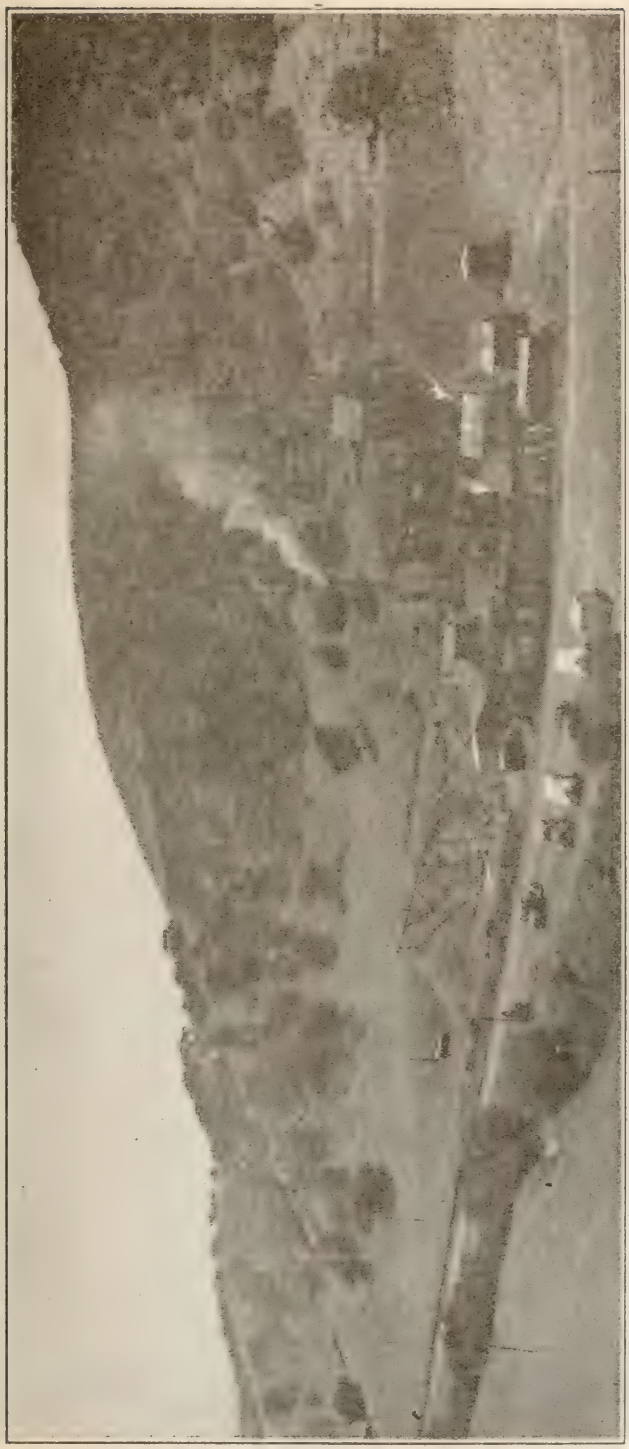
One company, operating what is known as the Waldorf Mine, drove a tunnel into the hill to a distance of 1500 feet, following a fissure, which was filled with asphaltum. This mine has long since been abandoned and is now unsafe for entrance.

Companies Now Operating for Oil.

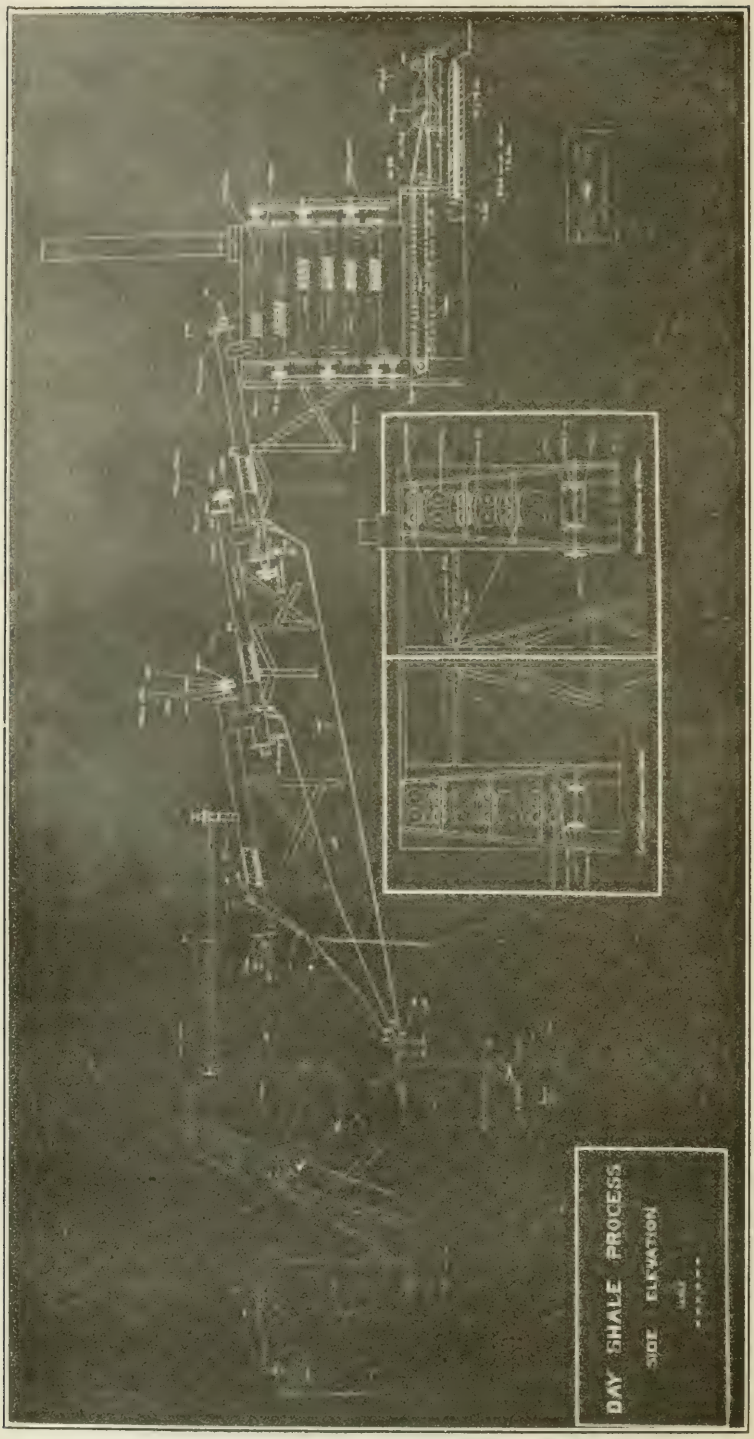
THE DAY COMPANY.

Dr. David T. Day is operating an experimental plant at the railroad cut near the station of Schuman. The Day Process is that of destructive distillation and cracking to obtain lighter oil for the purpose of making gasoline and lubricating oils. The method of mining is by open cut. Small dump cars are filled with shale and conveyed to the crusher on a small track. The shale is dumped into crusher bins and from there into crushers where it is reduced to the size of about one and one-half inches in diameter. From here it is conveyed to another bin which has an adjustable outlet determining the rate of feed to the tubular screw conveyors, as shown on the flow sheet, Plate No. 3.[d] The shale travels through the three tubular screw conveyors to the retort at a predetermined rate of speed for maximum extraction of oil. As the shale enters

[c]Plate No. 2—Contour map of oil shale deposits.
[d]Plate No. 3—Flow sheet of Dr. Day's process.



Day shale oil plant near Schuman Station, Santa Barbara County, Cal.


DAY SHALE PROCESS
SIDE ELEVATION

the retort, where an average temperature of about 800 degrees Fahrenheit is constantly maintained, destructive distillation is begun. The higher volatiles are driven off first and continuing on down to the residium as the shale approaches the fire box. Enough carbon remains in the shale to maintain a constant heat in the fire box or combustion chamber, which slowly deposits the spent shale by means of a LaClede-Christy chain stoker to an endless-chain drag which deposits the spent shale at the dump.

As the gasses are driven off the shale upon entering the retort they follow back through the tubular screw conveyors and are partially condensed upon encountering the cold shale. As condensation takes place the incoming shale is preheated to a certain extent and given a bath of oil and as the oil is fed back towards the retort, cracking takes place, which results in a high gravity product. The average amount of oil obtained is about 30 gallons per ton of shale. According to data furnished by Dr. Day, the resultant product contains as follows:

Gasoline	30%
Kerosene	15%
Gas-oil	15%
Lubricants	30%
Residium and Loss	10%

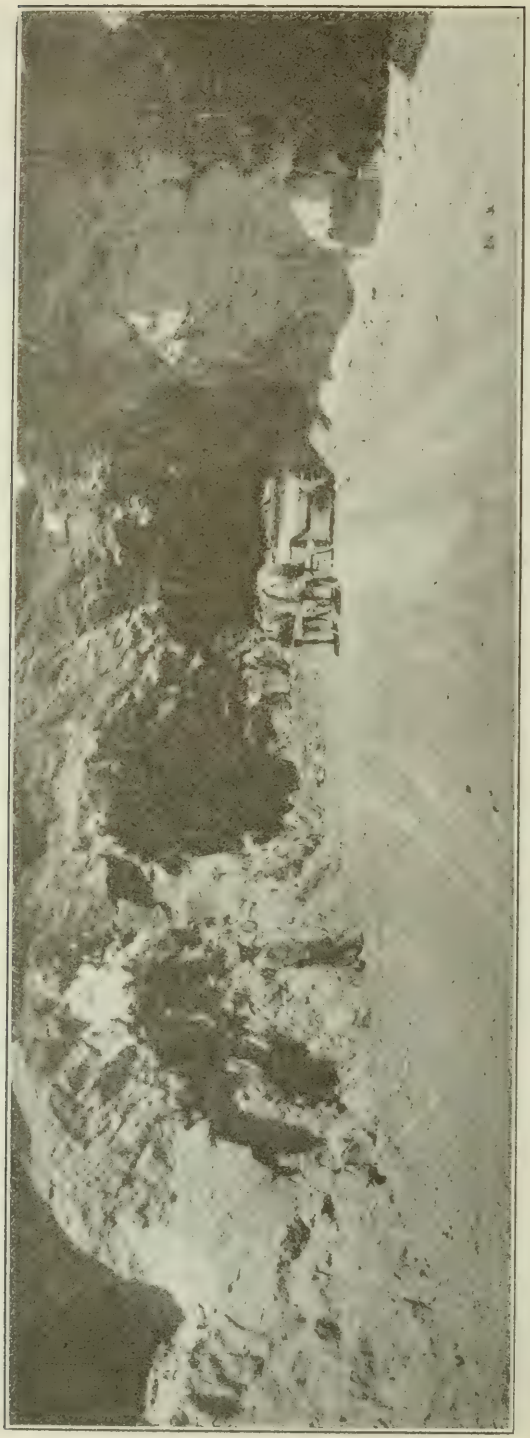
The crude oil contains from 1% to 3% pyridine bases.

THE N. T. U. COMPANY.

The N. T. U. Company, with offices in the Monadnock Building, San Francisco, California, has been operating for the past year on what is known as the Stokes property near Casmalia. On this property are located some of the largest deposits of oil shale in the area under consideration.

A 20-ton plant was erected for experimental purposes and the results obtained were so satisfactory that the company is now erecting a large commercial plant comprising 25 units of 40-ton capacity each, which will handle 1000 tons of shale per day. The open cut method of mining will be followed and the shale delivered to the battery of generators by means of a standard guage railway dump car of 40-tons capacity. In this process it is necessary to crush the shale to pieces of two-inch diameter. The car containing the shale from the quarry, which has been crushed to the desired size, is dumped directly into the generator.

Process Used: The principles involved in the practice of this process differ from retorting methods in that direct internal combustion on the non-oil forming combustible matter contained in the shale is utilized. The combustion is caused to travel progressively downward through a mass of shale contained in a closed chamber, thereby furnishing heat which, travelling downward in advance of combustion, creates a working zone in which the oil is distilled from the shale, either by destructive or simple distillation. None of the oil comes in contact with the hot zone of combustion, as all of it travels progressively downward in advance of the combustion to the bottom of chamber where it is recovered; whereas, in the recovery of oil from shale in all retorting



Main quarry of N. T. U. Company, near Casmalia, Santa Barbara County, Cal.

General view of plant of N. T. U. Company, near Casmalia, Santa Barbara County, Cal.

plants, the method used involves the external heating of a retort or chamber containing the charge of shale.

The process used by this company is fully patented and the patents are owned by the S. E. Company. The N. T. U. Company holds the United States license.

The process consists of a generator, condenser and scrubber. Referring to the flow sheet, Plate No. 4, the generator is first filled with oil shale and fired at the top. The top is then closed, allowing only sufficient oxygen to enter for the purpose of complete combustion. A vacuum is placed on the outlet pipes by means of an electric fan and the direction of fire brought downward through the cold shale. Sufficient vacuum is applied to regulate the proper burning of the shale for the purpose of obtaining the maximum amount of oil and gas there-

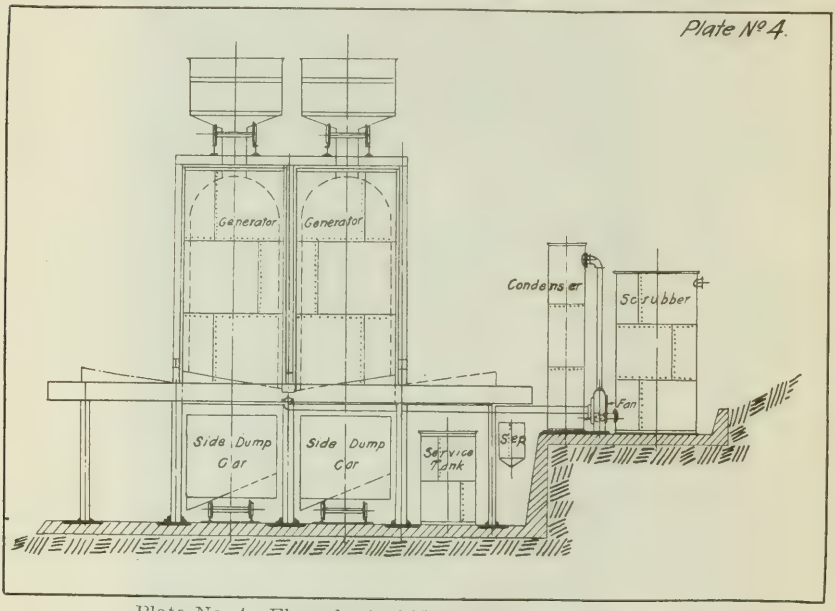


Plate No. 4—Flow sheet of N. T. U. Company's process.

from. As the gasses are driven off by heat they are partially condensed by encountering the cold shale and are further condensed when passing through the condenser and scrubber.

This process of extraction does not crack the oil excessively and as a result the crude oil contains certain properties that make it very desirable for use as flotation oil in the recovery of sulphide minerals in ores.

By this process it is reported that over 90 per cent of the total shale oil can be recovered. The gravity of the oil is about 14 degrees Baumé. As high as 40 gallons to the ton has been obtained. However, the average runs between 30 and 35 gallons to the ton.

Flotation Tests.

Hamilton, Beauchamp & Woodworth, metallurgical engineers of San Francisco, made the following tests for flotation processes:

TEST No. 1.

Flotation Using N. T. U. 'Shale' Oil.

Conditions for Flotation.

Ore:	crushed wet to 80 mesh.
Machine:	mechanical agitation.
Pulp dilution:	4:1.
Temperature:	normal.
Time of agitation:	20 minutes.
Separating reagents:	lbs. per ton of ore.
	1.0 " shale oil.
	.1 " hardwood creosote.
	.1 " pine oil.
	4.0 " crude sodium carbonate.

Results of Test.

	Per cent weight	Assay		Content		Per cent distribution	
		Au $	Ag ounces	Au $	Ag ounces	Au	Ag
Head	100.0	2.89	24.70	3.038	25.203	100.00	100.00
Conct.	10.0	24.80	245.28	2.480	24.528	81.63	97.32
Tail	90.0	.62	.75	.558	.675	18.37	2.68

TEST No. 2.

Test Made July, 1921.

Conditions for Flotation.

Ore:	80 mesh.
Machine:	mechanical agitation.
Pulp dilution:	4:1.
Temperature:	normal.
Time of agitation:	20 minutes.
Separating reagents:	lbs. per ton of ore.
	1.0 " P. E. collector.
	.3 " hardwood creosote.
	.1 " pine oil.
	4.0 " crude sodium carbonate. (Trona.)

Results of Test.

	Per cent weight	Assay		Content		Per cent distribution	
		Au $	Ag ounces	Au $	Ag ounces	Au	Ag
Head	100.00	3.10	28.25	3.575	27.24	--------	--------
Conct.	13.26	23.56	200.16	3.124	26.54	87.38	97.4
Tail	86.74	.62	.80	.451	.70	12.62	2.6

Ratio of concentration 7.54:1.

In comparing the results of the two tests, the assays of tailing should be considered rather than the percentage distribution for the reason that the difference shown in percentage extraction is entirely due to a difference in head value between the two samples tested, the tailing assays for gold and silver being almost identical in each case with a slight advantage in favor of Shale oil in the silver extraction."

The following statement as regards the advantages of the Shale oil for flotation purposes was made by Mr. Beauchamp as follows:

"The advantages in favor of 'Shale' oil, as far as the ore under investigation is concerned, seem to be that it tends toward producing a cleaner concentrate and reduces the amount of other frothing oils needed to give the right frothing condition.

Shale oil is easily mixed into the pulp with a minimum of agitation and appears to be an excellent flotation reagent."

Shale Oil vs. Commercial Crude.

It is not likely that shale oil will substitute for our present crude oil as obtained from wells for many years hence. This is due largely to the chemical properties of the shale oil. When first obtained the oil has a gravity of about 14 degrees Baumé and is very low in viscosity. It is bright green in color. When exposed to sunlight the bright green hue is lost and it becomes a dark brown with an increase in viscosity. These changes are apparently due to oxidation hastened by the catalytic effect of the high sulphur content of the oil. The removal of the sulphur compounds is the chief difficulty to be met with in refining. Aromatic hydrocarbons constitute the largest percentage of the oil. Tar acids and nitrogenous oils are present in very small quantities. Shale oil readily emulsifies with the water present in the shale during the process of extraction and is more difficult to dehydrate than the ordinary crude petroleum.

Future Possibilities of the Oil Shale Industry in California.

According to estimates made from available data there is an existing market of approximately 5,000,000 gallons per year of flotation oil. Should shale oil as produced in Santa Barbara county substitute for higher priced collective agents now in use by the mining industry, the extraction of oil from shale will be one of the important industries of this state.

The oil shale industry in its present stage of development is not comparable to the petroleum industry. The methods of obtaining and refining the oil are entirely different and the problems connected with the refining of shale oil are more complex than are those of refining petroleum.

To be successful a company formed for the purpose of producing shale oil must be sound financially and able to procure high technical and business ability. It should also be prepared to carry on exhaustive experiments and be satisfied with a very slow return on the money invested.

AGRICULTURAL MINERALS ACT.

A new state law known as the Agricultural Minerals Act was passed at the last session of the legislature. This law became operative on August 16th, and officials of the Division of Chemistry, State Department of Agriculture, are now enforcing it.

The provisions of this act are of interest to all producers of agriculture limestone, lime, marl, gypsum and other minerals used for soil treatment. The following statement prepared by officials of the Department of Agriculture has been made available through the cooperation of that department with the State Mineralogist:

AGRICULTURAL MINERALS MUST BE REGISTERED AFTER AUGUST 16th.

This law is intended to prevent fraud in the sale of agricultural lime, marl, gypsum, etc., and other minerals sold for soil treatment, and to raise the standard of such substances by requiring the labeling of every lot, giving the percentage of valuable constituents and the name of the registered producer or dealer.

Before any agricultural mineral can be legally offered for sale after August 16th, it must first be registered with the State Department of Agriculture by the producer, manufacturer, importer, agent, or dealer. If it is registered by any one of these parties no other registration is required, provided it is sold in the original, unbroken package of and under the label of the registered party. The registration fee is $50, regardless of the items registered, and is payable at the time application for registration is made. No provision is made for remitting part of this fee for a part of the year. All registrations expire on the thirtieth day of June, 1924.

If an agricultural mineral is sold under a trade name or brand it is necessary to file with the Director of Agriculture a sworn statement of its composition. All remittances must be made payable to the State Department of Agriculture.

The scope of the law as defined in section 2 reads in part as follows:

> The term 'agricultural mineral' as used in this act shall include any mineral substance, or mixture of mineral substances, or mixture of mineral and organic substances intended to be used for promoting or stimulating the growth of plants, increasing the productiveness of plants, or producing any chemical or physical change in the soil * * *.

The law, however, does not apply to minerals or mixtures containing nitrogen, phosphoric acid, or potash in commercial quantities, such as potash salts, superphosphates, nitrate of soda, nitrate of lime, cyanamid, sulphate of ammonia, etc. These must be registered under the California Fertilizer Law of 1903 as before. Raw phosphate rock and mixtures of this with lime or sulphur may be registered under either law.

Each lot of agricultural mineral must be labeled or tagged, stating:

1. Name, brand, or trade mark.
2. Name and address of the registered producer, manufacturer, importer or dealer.
3. Place of manufacture or production.
4. The word 'registered' and the registration number.

5. A chemical analysis stating the percentage of every constituent claimed to be in the product.
6. A statement of the minerals from which all guaranteed constituents are derived.

Inspectors of the department will take up samples of agricultural minerals from time to time at the quarry, at the warehouse, and in the hands of dealers and purchasers as seem necessary to determine compliance with the law.

Samples of agricultural minerals may be submitted to the department by anyone to be tested to determine compliance or not with guarantee. The fees for making these tests are to be determined by the Director of Agriculture.

In addition to license fees, the enforcement of the law is provided for by means of a tax of 10 cents on each ton sold in the state.

Noncompliance with any part of the law constitutes a misdemeanor punishable by a fine of $50 for the first offense and $100 for each subsequent offense.

Section 10 reads as follows: "The Director of Agriculture shall have the power, after hearing, to cancel the registration of, or to refuse to register, any agricultural mineral which has been shown to have little or no value for the purpose for which it is intended to be used, or has been shown to be generally detrimental or seriously injurious to the growth or productiveness of plants."

Parties desiring further information should write to the Division of Chemistry, State Department of Agriculture, Sacramento, California.

ADMINISTRATIVE DIVISION.

WALTER W. BRADLEY, Deputy State Mineralogist.

New District Office.

In line with the efficiency and economy program of the new state administration, the State Mineralogist decided upon the closing of the Redding and Auburn district branch offices of the State Mining Bureau, and their consolidation into a single office located in Sacramento. This was accomplished in June.

The use of office space in the Chamber of Commerce Building, Seventh street, between I and J, was made possible through the cordial cooperation of the Sacramento Chamber of Commerce, which has established a Department of Mines and Mining and is showing every disposition to aid the mining industry of the state by such means as are within its province. For this, the State Mining Bureau and the mining industries are duly appreciative. Historically and geographically, the principal mining districts of central California are and have always been the 'back country' of the capital city, and it is gratifying that the business men of the city have come to realize that the prosperity of the mines at their back door is a matter of business interest to themselves.

The new office of the Bureau at Sacramento will make available for public use in a central location a general information bureau on the mines and the undeveloped mineral resources of the state. There will also be kept at the office, for public reference, practically every geological and mining report issued by the government bureaus dealing with the state's mineral resources, and many maps and reference books of value.

New Publications.

During the period covered by this issue (March 16–September 15) the following Bureau publications have been made available for distribution:

Bulletin No. 91, "Minerals of California"; price $1.00 post paid.

The first list of California's minerals was published by W. P. Blake in 1866, and it comprised about seventy-five mineral species. California was at that time a new and largely unexplored field, and only a few scattered localities were known for mineral specimens.

The second list appeared in 1884 as a part of the Fourth Annual Report of the State Mineralogist, by Henry G. Hanks; and included double the number of previously known minerals.

A third list was issued in 1914 as Bulletin 67 of the State Mining Bureau, written by Dr. A. S. Eakle, professor of mineralogy at the University of California. In the thirty years which had elapsed since the appearance of the second list our knowledge of geology and mineralogy of the state had vastly increased. The ore deposits of many of the counties, the gem and borate deposits of the southern counties, and the petrography of many districts, had been investigated and described, so that the third list contained more than double the number of definite mineral species given by Hanks, besides many sub-species and varieties.

Publication of a fourth list is now accomplished, being an enlarged and revised edition of the third list and likewise written by Professor Eakle. It has been designated Bulletin 91 of the State Mining Bureau, entitled "Minerals of California." In addition to increases in the number of Californian localities of mineralogic interest, the number of mineral species not hitherto reported in California is considerably increased. One of the new minerals, troilite, has never previously been found on the earth except in meteorites. A new feature of Bulletin 91, not given in previous editions, is the addition of the principal blow-pipe and chemical identification tests for each mineral.

Summary of Operations, California Oil Fields, Vol. 8: December, 1922, No. 6; January, 1923, No. 7; February, 1923, No. 8; March, 1923, No. 9; April, 1923, No. 10; May, 1923, No. 11.

Mining in California, December, 1922, Vol. 18, No. 12.

Mining in California, January, 1923, Vol. 19, No. 1; February, 1923, Vol. 19, No. 2; March, 1923, Vol. 19, No. 3.

Map No. 28, Torrance (Redondo) Oil Field; price 75 cents.

Commercial Mineral Notes: No. 1, April; No. 2, May; No. 3, June; No. 4, July; No. 5, August.

As the timeliness of publication is important in the case of the lists of 'mineral deposits wanted' and 'minerals for sale,' it was decided to issue that information in the form of a mimeograph sheet once a month, since the change to a quarterly status of 'Mining in California' which formerly was the vehicle for disseminating such information. This list is mailed, free of charge, to those on the mailing list for 'Mining in California.'

Mails and Files.

The Bureau maintains, in addition to its correspondence file, a mine report file which includes reports on some 7500 mines and mineral properties in California. Also there is available to the public a file of the permits granted to mining and oil corporations by the State Commissioner of Corporations.

During the past three months 3726 letters were received and answered. They are practically all requests for information and the inquiries cover all phases of prospecting, mining and developing mineral deposits, reduction of crude minerals, and marketing of refined products.

Drafting Room.

This is purely a workshop, and is the only branch of the Bureau that is not primarily at the direct service of the public. In the drafting room well logs, maps, sketches, etc., are prepared for the many publications and reports which are under way at all times.

Changes in Personnel.

Since the March issue of 'Mining in California' the following changes in personnel have taken place:

Mr. R. E. Collom, state oil and gas supervisor since January, 1921, has resigned, effective October 1st, to engage in private practice.

Mr. R. D. Bush has been appointed state oil and gas supervisor, vice R. E. Collom resigned. Mr. Bush received his technical training at the University of California, was a deputy and chief deputy oil and gas supervisor of this department 1917-1920, and the past three years has been engaged in technical work with the Empire Gas and Fuel Company in the oil fields of Kansas.

Mr. M. A. Newman, for the past year district mining engineer in charge of the southern district, with offices at Los Angeles, resigned in June, to engage in private practice.

Mr. W. Burling Tucker, district mining engineer in charge of the Redding district, has been transferred to the Los Angeles office of the Bureau.

Mr. C. A. Logan, for the past four years in charge of the Auburn district, has been transferred to Sacramento, in charge of the new district formed by consolidation of the Redding and Auburn districts.

Mr. Forest L. Campbell, a graduate of the University of California in mining engineering, has been appointed librarian of the Bureau, and is in charge of the information desk at the San Francisco office.

Mr. J. J. McDonald, for the past eight years assistant mining statistician, resigned in May, to engage in private business.

DIVISION OF MINERALS AND STATISTICS.

Statistics, Museum, Laboratory.

WALTER W. BRADLEY, Deputy State Mineralogist.

STATISTICS.

MINERAL PRODUCTION OF CALIFORNIA IN 1922.

Compilation of the direct returns to the State Mining Bureau from the various operators throughout the state show the total aggregate value of the mineral output of California for the year 1922 to have been $245,183,826, being a decrease of $22,973,646 from the 1921 total of $268,157,472. There were fifty-three different mineral substances, exclusive of a segregation of the various stones grouped under gems; and all of the fifty-eight counties of the state contributed to the list.

The salient features of 1922 compared with the preceding year, were: The continued increase in petroleum yield, although of lower prices per barrel; increases in copper, lead, natural gas, brick and tile, and crushed rock; and decreases in gold, silver, cement, and petroleum values. The net result was a decrease in the grand total of all groups of nearly twenty-three million dollars, as stated above. Petroleum accounted for a decrease of $29,756,960 in total value, although there was an increase in quantity of approximately 26,000,000 barrels.

Of the metals: copper increased from 12,088,053 pounds, worth $1,559,358, to 22,883,987 pounds, worth $3,090,582; lead, from 1,149,051 pounds and $51,707, to 6,511,280 pounds and $358,120; zinc, quicksilver, platinum, and iron ore also showed increases. Gold decreased from $15,704,822 to $14,670,346, in spite of which in 1922 California accounted for approximately 30 per cent of the gold output of the United States.

Of the structural group: brick and tile increased in value from $5,570,875 to $7,994,991; miscellaneous stone (comprising crushed rock, sand and gravel, paving blocks) from $7,834,640 to $10,377,783; magnesite, lime, marble, and onyx also increasing; cement, although increasing from 7,404,221 barrels to 8,962,135 barrels in output, decreased from $18,072,120 to $16,524,056 in value. Slate again joined the active list with a small yield.

In the 'industrial' group, there were a number of fluctuations, the more important increases being shown by mineral water, pottery clay, gypsum, and pyrites; and decreases by diatomaceous earth, and limestone. Two new items were added in 1922 to this list, not previously produced commercially in California, namely: shale oil and sillimanite. In the saline group, potash and soda increased, with borates, magnesium salts, salt, and calcium chloride, decreasing.

Details of the 1922 production data are published in our Bulletin 93.

The following table shows the comparative yield of mineral substances of California for 1921 and 1922 as compiled from the returns received at the State Mining Bureau, San Francisco, in answer to inquiries sent to producers:

Substance	1921		1922	
	Amount	Value	Amount	Value
Asbestos	410 tons	$19,275	50 tons	$1,800
Barytes	901 tons	4,809	3,370 tons	18,925
Bituminous rock	8,298 tons	43,192	4,624 tons	13,570
Borates	50,136 tons	1,096,326	[1]39,087 tons	1,068,025
Calcium chloride	683 tons	22,980	(3)	(3)
Cement	7,404,221 bbls.	18,072,120	8,962,135 bbls.	16,524,056
Brick and tile		5,570,875		7,994,991
Chromite	347 tons	6,870	379 tons	6,334
Clay (pottery)	225,120 tons	362,172	277,232 tons	473,184
Coal	12,467 tons	63,578	27,020 tons	135,100
Copper	12,088,053 lbs.	1,559,358	22,883,987 lbs.	3,090,582
Dolomite	31,195 tons	99,155	52,409 tons	114,911
Feldspar	4,349 tons	28,343	4,587 tons	37,109
Fuller's earth	1,185 tons	8,295	6,606 tons	48,756
Gems		10,954		1,312
Gold		15,704,822		14,670,346
Granite		725,901		676,643
Graphite	(2)	(2)	(3)	(3)
Gypsum	37,412 tons	78,875	47,084 tons	188,336
Infusorial and diatomaceous earths	(2)	(2)	(3)	(3)
Iron ore	1,970 tons	12,030	3,588 tons	18,868
Lead	1,149,051 lbs.	51,707	6,511,280 lbs.	358,120
Lime	463,534 bbls.	610,619	578,748 bbls.	671,747
Limestone	75,921 tons	305,912	84,382 tons	282,181
Lithia	(2)	(2)	(3)	(3)
Magnesite	47,837 tons	511,102	55,637 tons	594,665
Magnesium salts	4,153 tons	106,140	3,036 tons	89,788
Manganese ore	1,005 tons	12,210	540 tons	7,650
Marble	30,232 cu. ft.	98,395	38,321 cu. ft.	127,792
Mineral paint	446 tons	4,748	1,620 tons	13,277
Mineral water	3,446,278 gals.	367,476	4,276,346 gals.	486,424
Natural gas	67,043,797 M. cu. ft.	4,704,678	103,628,027 M. cu. ft.	6,990,030
Onyx	2,569 cu. ft.	1,294	10,950 cu. ft.	3,320
Petroleum	112,599,860 bbls.	203,138,225	138,468,222 bbls.	173,381,265
Platinum	613 fine oz.	58,754	795 fine oz.	90,288
Potash	14,806 tons	390,210	17,776 tons	584,388
Pumice and volcanic ash	406 tons	6,310	613 tons	4,248
Pyrites	110,025 tons	473,735	151,381 tons	570,425
Quicksilver	3,157 flasks	140,666	3,466 flasks	191,851
Salt	197,989 tons	832,702	223,238 tons	819,187
Sandstone	10,150 cu. ft.	2,112	900 cu. ft.	1,100
Shale oil			(3)	(3)
Silica (sand and quartz)	10,569 tons	49,179	9,874 tons	31,016
Sillimanite			(3)	(3)
Silver		3,629,223		3,100,065
Slate			(3)	(3)
Soapstone and talc	8,752 tons	130,078	13,378 tons	197,186
Soda	14,828 tons	438,996	20,084 tons	573,661
Stone, miscellaneous[4]		7,834,640		10,377,783
Zinc	846,184 lbs.	42,309	3,034,430 lbs.	172,963
Unapportioned		[2]726,122		[3]380,558
Total values		$268,157,472		$245,183,826

(1) Recalculated to 40 per cent 'anhydrous boric acid' equivalent.
(2) Unapportioned—includes graphite, diatomaceous earth, and lithia.
(3) Unapportioned—includes calcium chloride, graphite, diatomaceous earth, lithia, shale oil, sillimanite, and slate.
(4) Includes macadam, ballast, rubble, riprap, paving blocks, sand, gravel, and grinding-mill pebbles.

The following table shows the comparative value of the mineral production of the various counties in the state, for the years 1921 and 1922:

County	1921	1922
Alameda	$1,353,690	$2,041,454
Alpine	925	2,800
Amador	2,368,464	2,479,063
Butte	669,830	720,625
Calaveras	1,525,201	1,502,883
Colusa	80,438	75,934
Contra Costa	1,622,732	2,397,312
Del Norte	6,029	6,261
El Dorado	112,756	184,525
Fresno	19,498,503	10,853,433
Glenn	103,197	91,250
Humboldt	138,597	125,613
Imperial	182,818	188,739
Inyo	1,460,218	2,137,681
Kern	100,840,933	68,551,002
Kings	5,722	6,806
Lake	174,389	48,289
Lassen	83,485	27,327
Los Angeles	31,704,941	62,751,671
Madera	467,667	476,264
Marin	318,776	403,099
Mariposa	342,601	226,832
Mendocino	44,722	20,526
Merced	33,550	157,579
Modoc	36,650	16,018
Mono	56,876	86,863
Monterey	170,155	255,319
Napa	195,239	312,270
Nevada	2,641,081	2,966,005
Orange	47,499,030	38,926,087
Placer	449,070	405,975
Plumas	1,798,461	3,314,498
Riverside	4,883,898	3,243,917
Sacramento	2,394,894	2,189,562
San Benito	1,386,093	1,794,248
San Bernardino	9,375,540	8,547,900
San Diego	501,393	656,807
San Francisco	41,562	65,409
San Joaquin	474,378	473,395
San Luis Obispo	129,791	141,470
San Mateo	257,092	243,984
Santa Barbara	10,190,929	4,613,358
Santa Clara	750,708	894,036
Santa Cruz	4,080,885	3,608,805
Shasta	841,262	1,513,591
Sierra	620,361	1,770,626
Siskiyou	93,147	101,463
Solano	3,030,198	3,108,114
Sonoma	175,551	221,941
Stanislaus	236,207	452,167
Sutter	54	97
Tehama	30,820	9,388
Trinity	456,882	197,937
Tulare	552,234	371,845
Tuolumne	554,483	764,938
Ventura	6,245,269	5,837,078
Yolo	14,829	13,431
Yuba	4,852,266	2,588,316
Total values	$268,157,472	$245,183,826

Total Mineral Production of California, by Years.

The following tabulation gives the total value of mineral production of California by years since 1887, in which year compilation of such data by the State Mining Bureau began. At the side of these figures the writer has placed the values of the most important metal and non-metal items—gold and petroleum.

In the same period copper made an important growth beginning with 1897 following the entry of the Shasta County mines, and more recently Plumas County. Cement increased rapidly from 1902, while crushed rock, sand and gravel as a group parallels the cement increase. Quicksilver has been up and down. Mineral water and salt have always been important items, but the values fluctuate. Borax has increased materially since 1896. War-time increases, 1915–1918, were shown by chromite, copper, lead, magnesite, manganese, silver, tungsten and zinc. Most of these, except silver, have since declined; with structural materials and copper increasing in 1920–1922.

Total Mineral Production of California by Years, Since 1887.

Year	Total value of all minerals	Gold, value	Petroleum, value
1887	$19,785,868	$13,588,614	$1,357,144
1888	19,469,320	12,750,000	1,380,666
1889	16,681,731	11,212,913	368,048
1890	18,039,666	12,309,793	384,200
1891	18,872,413	12,728,869	401,264
1892	18,300,168	12,571,900	561,333
1893	18,811,261	12,422,811	608,092
1894	20,203,294	13,923,281	1,064,521
1895	22,844,663	15,334,317	1,000,235
1896	24,291,398	17,181,562	1,180,793
1897	25,142,441	15,871,401	1,918,269
1898	27,289,079	15,906,478	2,376,420
1899	29,313,460	15,336,031	2,660,793
1900	32,622,945	15,863,355	4,152,928
1901	34,355,981	16,989,044	2,961,102
1902	35,069,105	16,910,320	4,692,189
1903	37,759,040	16,471,264	7,313,271
1904	43,778,348	19,109,600	8,317,809
1905	43,069,227	19,197,043	9,007,820
1906	46,776,085	18,732,452	9,238,020
1907	55,697,949	16,727,928	16,783,943
1908	66,363,198	18,761,559	26,566,181
1909	82,972,209	20,237,870	32,398,187
1910	88,419,079	19,715,440	37,689,542
1911	87,497,879	19,738,908	40,552,088
1912	88,972,385	19,713,478	41,868,344
1913	98,644,639	20,406,958	48,578,014
1914	93,314,773	20,653,496	47,487,109
1915	96,663,369	22,442,296	43,503,837
1916	127,901,610	21,410,741	57,421,334
1917	161,202,962	20,087,504	86,976,209
1918	199,753,837	16,529,162	127,459,221
1919	195,830,002	16,695,955	142,610,563
1920	242,099,667	14,311,043	178,394,937
1921	268,157,472	15,704,822	203,138,225
1922	245,183,826	14,670,346	173,381,265
Totals	$2,751,150,349	$602,218,554	$1,365,753,916

MUSEUM.

The Museum of the State Mining Bureau possesses an exceptionally fine collection of rocks and minerals of both economic and academic value. It ranks among the first five of such collections located in North America; and contains not only one or more samples of most of the known minerals found in California, but many specimens from other states and foreign countries as well.

Mineral specimens suitable for exhibit purposes are solicited, and their donation will be appreciated by the State Mining Bureau as well as by those who utilize the facilities of the collection. The Bureau supplies a set of forty typical minerals and ores, appropriately labeled, for study purposes to any public school in the state upon request.

LABORATORY.

FRANK SANBORN, Mineral Technologist.

During the five-month period covered by this report 1584 samples were received and determined at the laboratory of the Bureau. These samples were of great variety; salines, precious metals, and gem stones being received and recorded as having a possible commercial value.

A rather large demand has been created during recent months for colored rocks suitable as a 'dash' in stucco work. To be desirable for this, the material should be hard, compact, and of a pleasing color. Red, green, yellow, and black are the colors usually desired, but there are others that would probably be suitable for such decorative work. There is the blue dumortierite and glaucophane-schist, the pistachio-green epidote and epidosite, rocks having the properties of reflecting light, such as micaceous hematite and some mica-schist. These and many other rocks and minerals if once introduced as ornamental stones in certain types of buildings, would possibly be a means by which the use of colored stones could be increased, and a market found for many rocks having no commercial value at present.

The demand for pyrite and galena making good radio crystals is still active. Sensitive crystals are worth between 50 cents and $1 per pound at the mine. This laboratory is not equipped for making tests for sensitiveness.

LIBRARY.

FOREST L. CAMPBELL, Librarian.

In addition to the numerous standard works, authoritative information on many phases of the mining and mineral industry is constantly being issued in the form of reports and bulletins by various government agencies.

The library of the State Mining Bureau contains some five thousand selected volumes on mines, mining and allied subjects, and it is also a repository for reports and bulletins of the technical departments of federal and state governments and of educational institutions, both domestic and foreign.

It is not the dearth of the latter publications, but rather a lack of knowledge of just what has been published and where the reports may be consulted or obtained, that embarrasses the ordinary person seeking specific information.

To assist in making the public acquainted with this valuable source of current technical information, 'Mining in California' contains under this heading a list of all books and official reports and bulletins received, with names of publishers or issuing departments.

Files of all the leading technical journals will be found in the library, and county and state maps, topographical sheets and geological folios. Current copies of local newspapers published in the mining centers of the State are available for reference.

The library and reading room are open to the public during the usual office hours, when the librarian may be freely called upon for all necessary assistance.

OFFICIAL PUBLICATIONS RECEIVED.

Governmental.

U. S. Geological Survey:

Bulletin No. 729—Oil Shale of the Rocky Mountain Region. By Dean C. Winchester.

Bulletin No. 732—Geology and Ore Deposits of Shoshone County, Idaho. By Joseph B. Umpleby and E. L. Jones, Jr.

Bulletin No. 734—Deposits of Manganese Ore in the Batesville District, Arkansas. By Hugh D. Miser.

Bulletin No. 735-I—Diamond-Bearing Peridotite in Pike County, Arkansas. By Hugh D. Miser and Clarence S. Ross.

Bulletin No. 735-J—The Los Burros District, Monterey County, California. By James M. Hill.

Bulletin No. 740—Mica Deposits of the United States. By Douglas B. Starrett.

Bulletin No. 741—The Jarbridge Mining District, Nevada. By Frank C. Schrader.

Bulletin No. 743—Geology of the Oatman Gold District, Arizona. By F. L. Ransome.

Bulletin No. 689—Boundaries, Areas, Geographic Centers and Altitudes of the United States and the Several States. By Edward M. Douglas.

Bulletin No. 709—Triangulation and Primary Traverse 1916–1918. By C. H. Birdseye.

Bulletin No. 717—Sodium Sulphate; Its Sources and Uses. By Roger C. Wells.

Bulletin No. 718—Geology and Ore Deposits of the Creede District, Colo. By Wm. H. Emmons and Esper S. Larsen.

Bulletin No. 738—The Commercial Granites of New England. By T. Nelson Dale.

Bulletin No. 739—Mineral Resources of Alaska. A Report on Progress of Investigations in 1921. By A. H. Brooks and others.
Bulletin No. 744—The Lime Belt of Massachusetts and Parts of Eastern New York and Western Connecticut. By T. Nelson Dale.
Bulletin No. 745—The Kotsina-Kuskulana District Alaska. By Fred H. Moffit and J. H. Mertie, Jr.
Bulletin No. 750-A—Ilsemannite at Ouray, Utah. By Frank L. Hess.
Bulletin No. 751-B—Progress Report on a Subsurface Study of the Pershing Oil and Gas Field, Osage County, Oklahoma. By W. W. Rubey.
Prof. Paper No. 131-F—Revision of The Flora of The Green River Formation With Descriptions of New Species. By F. H. Knowlton.
Prof. Paper No. 131-G—Fossil Plants from the Tertiary Lake Beds of South Central Colorado. By F. H. Knowlton.
Prof. Paper No. 131-H—The Fauna of the So-called Dakota Formation of Northern Central Colorado and Its Equivalent in Southeastern Wyoming. By John B. Reeside, Jr.
Prof. Paper No. 132-A—Rock Formations in the Colorado Plateau of Southeastern Utah and Northern Arizona. By C. R. Longwell et al.
Water-Supply Paper No. 488—The Floods in Central Texas in September, 1921. By C. E. Ellsworth.
Water-Supply Paper No. 493—Hydroelectric Power Systems of California and Their Extension Into Oregon and Nevada. By Frederick Hall Fowler.
Water-Supply Paper No. 504—Surface Water Supply of the United States, 1919–1920. Part IV—St. Lawrence River Basin. By Nathan C. Grover and others.
Water-Supply Paper No. 496—The Industrial Utility of Public Water Supplies in the United States. By W. D. Collins.
Water-Supply Paper No. 469—Surface Waters of Wyoming and Their Utilization. By Robert Follansbee.
Water-Supply Paper No. 495—Geology and Ground Water Resources of Sacramento Valley, California. By Kirk Bryan.
Water-Supply Paper No. 512—Surface Water Supply of the U. S., 1919 and 1920. Part XII—North Pacific Slope Drainage Basins. A. Pacific Basins in Washington and Upper Columbia River Basin. By Nathan C. Grover and others.
Water-Supply Paper No. 501—Surface Water Supply of the United States, 1919–1920. Part I—North Atlantic Slope Drainage Basin. By Nathan C. Grover and others.
Water-Supply Paper No. 510—Surface Water Supply of the United States, 1919–1920. Part X—The Great Basin. By Nathan C. Grover and others.

Mineral Resources of the United States:

Chromite in 1922. By Edward Sampson.
Preliminary Summary, 1922.
Asbestos in 1922. By Edward Sampson.
Coke and By-products in 1921. By R. S. McBride.
Gold, Silver, Copper, Lead and Zinc in the Eastern States in 1922. By J. P. Dunlap.
Part 1. Metals.
Part 1. Bismuth, Selenium, and Tellurium in 1922. By Victor C. Heickes.
Lead in 1922. By C. E. Siebenthal and A. Stoll.
Zinc in 1922. By C. E. Siebenthal and A. Stoll.
Asphalt and Related Bitumens in 1922. By K. W. Cottrell.
Part 1. Bauxite and Aluminum in 1922. By James M. Hill.
Salt, Bromine and Calcium Chloride in 1922. By K. W. Cottrell.
Fluorspar and Cryolite in 1922. By Hubert W. Davis.
Antimony in 1922. By Frank C. Schrader.
Peat in 1922. By K. W. Cottrell.
Petroleum in 1919–1921. By G. B. Richardson.
Lead and Zinc Pigments and Salts in 1922. By C. E. Siebenthal and A. Stoll.
Iron Ore, Pig Iron and Steel in 1921. By Ernest F. Burchard and Hubert W. Davis.
Fuel Briquets in 1922. By W. F. McKenney.
Cadmium in 1922. By C. E. Siebenthal and A. Stoll.
Natural Gas in 1919–1921. By B. S. McBride and E. G. Sievers.

U. S. Department of Commerce, Commerce Reports April 9–16; May 7, 14, 21, 28; June 4, 1923:

Monthly Summary of Foreign Commerce of the United States, Part II, December, 1922, and January, 1923.

Monthly Summary of Foreign Commerce of the United States, Part II, February, 1923.

Monthly Summary of Foreign Commerce of the United States, Part I, April, 1923.

Monthly Summary of Foreign Commerce of the United States, Part II, March, May, June, July and August, 1923.

U. S. Coast Geodetic Survey:

Serial No. 216—Use of Geodetic Control for City Surveys. By Hugh C. Mitchell.

Serial No. 225—Reconnaissance and Signal Building. By Jasper S. Bilby.

Smithsonian Institution United States National Museum:

Bulletin No. 100, Vol. 3—Contributions to the Biology of the Philippine Archipelago and Adjacent Regions. By Rene Koehler.

Bulletin No. 123—Revision of The North American Moths of the Subfamily Eucosminae of the Family Olethrentidae. By Carl Heinrich.

Bulletin No. 124—The Type Species of the Genera of Chalcidordea or Chalcid-Flies. By A. B. Gahan and Margaret M. Fagen.

Smithsonian Institution, Annual Report, 1921:

U. S. National Museum—Bulletin No. 102, Part 8, Manufactured Gas in the Home. By Samuel S. Wyer.

U. S. National Museum—Proceedings of the United States National Museum. Vol. 61.

U. S. National Museum—Bulletin No. 126, Life Histories of North American Wild Fowl. By Arthur Cleveland Bent.

Bulletin No. 120—The Opolinid Ciliate Infusorians. By Maynard M. Metcalf.

Bulletin No. 125—North American Later Tertiary and Quarternary. By Ferdinand Canu and Ray S. Bassler.

Trees and Shrubs of Mexico. By Paul C. Standley.

Catalogue of the Watercraft Collection in the United States National Museum. By Carl W. Mitman.

U. S. Bureau of Mines:

Bulletin No. 211—The Chloride Volatilization Process of Ore Treatment. By Thomas Varley and Robert H. Bradford, E. P. Barrett and C. C. Stevenson.

Bulletin No. 213—Talc and Soapstone, Their Mining, Milling, Products and Uses. By Raymond B. Ladoo.

Bulletin No. 216—Bibliography of Petroleum and Allied Substances in 1919–1920. By E. H. Burroughs.

Bulletin No. 217—Preparation, Treatment and Combustion of Powdered Coal. By John Blizard.

Bulletin No. 204—Underground Ventilation at Butte. By D. Harrington.

Bulletin No. 219—Explosives, Their Materials, Constitution and Analysis. By C. A. Taylor and Wm. H. Rinkenbach.

Technical Paper No. 300—The Universal and the Fireman's Gas Masks. By S. H. Katz, J. J. Bloomfield and A. C. Fieldner.

Technical Paper No. 331—Metal Mine Accidents in the United States During the Calendar Year 1921. By William W. Adams.

Technical Paper No. 328—The Motor Gasoline Surveys of 1920 and 1921. By N. A. C. Smith.

Technical Paper No. 326—Fire in Steamship Bunker and Cargo Coal. By H. H. Soek.

Technical Paper No. 333—Permissible Explosives, Mining Equipment and Apparatus Approved Prior to January 1, 1923. By S. P. Howell et al.

Technical Paper No. 334—Mine Rescue Standards. A Tentative Study.

Technical Paper No. 339—Coal Mine Fatalities in the United States, 1922. By William W. Adams.

Technical Paper No. 340—Production of Explosives in the United States during the Calendar Year 1922. By William W. Adams.
Technical Paper No. 283—Tests of Low Grade and Complex Ores in Colorado. By Will H. Coghill and C. O. Anderson.
Technical Paper No. 294—Progress of Investigations on Liquid-Oxygen Explosives. By S. P. Howell et al.
Technical Paper No. 315—Comparative Tests of By-Product Coke and Other Fuels for House-Heating Boilers. By Henry Kreisinger et al.
Technical Paper No. 321—Anhydrous Aluminum Chloride. By Oliver C. Ralston.

Reports of Investigations:

Serial No. 2462—The Treatment of Natural-Gas Gasoline to Meet the Doctor Test. By D. B. Dow (Associate Organic Chemist, B. M.).
Serial No. 2463—Utilization of Waste Rock at Lime Plants. By Oliver Bowles (Mineral Technologist, B. M.).
Serial No. 2464—Physiological Effect of High Temperatures and Humidities With and Without Air Movement. By R. R. Sayers (Chief Surgeon, U. S. B. M., Surgeon U. S. Public Health Service) and D. Harrington (Supervising Mining Engineer, B. M.).
Serial No. 2465—Mine Timber in Illinois Coal Mines. By Harry E. Tufft (Mining Engineer, U. S. B. M.).
Serial No 2466—An Economic Study of the New Albany Shale. By John R. Reeves (Department of Geology, Indiana University).
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Serial No. 2469—The Desulphurization of Coke by Air. By Alfred R. Powell (Associate Chemist, Pittsburgh Experiment Station, B. M., Department of the Interior).
Serial No. 2470—Combustion of Powdered Coal. By Henry Kreisinger (Research Engineer, Combustion Engineering Corp.) and John Blizard (Fuel Engineer, U. S. B. M.).
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Serial No. 2472—Coal Mine Fatalities in March, 1923. By W. W. Adams (S. B. M.).
Serial No. 2473—Globe-Miami Mine Rescue Maneuvers. By E. D. Gardner (Mining Engineer, Department of the Interior, Bureau of Mines).
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Serial No. 2485—The Reduction of Iron Oxides by Fuel Gases. By E. D. Eastman.

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Serial No 2492—Results of Assays of the New Albany Oil-Shale. By John R. Reeves.

Serial No. 2493—The Wheat Electric Cap Lamp, Approval No. 17. By L. C. Ilsley and A. B. Hooker.

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Serial No. 2496—Platinum Assays and Platinum Promotions. By S. C. Lind, C. W. Davis and M. W. von Bernewitz.

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Serial No. 2499—Carbon Tetrachloride Extinguisher on Electric Fires. By S. H. Katz, E. J. Gleim and J. J. Bloomfield.

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Vol. XVII. Num. 17. Algunas Consideraciones Sobre Un Grupo de Cubicas. Por el Academico Numerario. Dr. Isidro Polit y Buxareu.
Vol. XVII. Num. 18. La Conductibilidad del Suerpo Humano a las Corrientes de Alta Frecuencia En Su Modalidad de Termopenetracion O Diatermia. Por el Academico Numerario. Dr. D. Luis Cirera Salse.
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Williamsport, Pa.

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For the convenience of persons wishing to consult the technical magazines in the reading room, a list of those on file is appended:

American Petroleum Institute, New York.
Architect and Engineer, San Francisco.
Arizona Mining Journal, Phoenix, Arizona.
Asbestos, Philadelphia, Pennsylvania.
Brick and Clay Record, Chicago.
Cement, Mill and Quarry, Chicago, Illinois.
Chemical Engineering and Mining Review, London, England.
Engineering and Mining Journal-Press, New York.
Financial Insurance News, Los Angeles, California.
Graphite, Jersey City.
Journal of Electricity and Western Industry, San Francisco.
Metallurgical and Chemical Engineering, New York.
Mining and Engineering Record, Vancouver, B. C.
Mining and Oil Bulletin, Los Angeles.
Oil Age, Los Angeles.
Oil and Gas Journal, Tulsa, Oklahoma.
Oil News, Galesburg, Illinois.
Oildom, New York.
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Oil Trade Journal, New York.
Oil Weekly, Houston, Texas.
Petroleum Age, New York.
Petroleum Record, Los Angeles.

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Queensland Government Mining Journal, Brisbane, Australia.
Rock Products, Chicago, Illinois.
Safety News, Industrial Accident Commission, San Francisco.
Salt Lake Mining Review, Salt Lake City, Utah.
Southwest Builder and Contractor, Los Angeles.
Standard Oil Bulletin, San Francisco.
Stone, New York.
The Record, Associated Oil Company, San Francisco.

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The following papers are received and kept on file in the library:

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Arkansas Oil and Mineral News, Hot Springs National Park (Arkansas).
Bakersfield Morning Echo, Bakersfield, Cal.
Blythe Herald, Blythe, Cal.
Bridgeport-Chronicle-Union, Bridgeport, Mono Co., Cal.
California Oil World, Los Angeles, Cal.
Colusa Daily Sun, Colusa, Cal.
Daily Commercial News, San Francisco, Cal.
Daily Midway Driller, Taft, Cal.
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Plumas National Bulletin, Quincy, Cal.
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Santa Barbara Daily News, Santa Barbara, Cal.
Shasta Courier, Redding, Cal.
Siskiyou News, Yreka, Cal.
Stockton Record, Stockton, Cal.
Tuolumne Prospector, Tuolumne, Cal.
Ventura Daily Post, Ventura, Cal.
Weekly Trinity Journal, Weaverville, Cal.
Western Sentinel, Etna Mills, Cal.

PRODUCERS AND CONSUMERS.

The producer and consumer of mineral products are mutually dependent upon each other for their prosperity, and one of the most direct aids rendered by the Bureau to the mining industry in the past has been that of bringing producers and consumers into direct touch with each other.

This work has been carried on largely by correspondence, supplemented by personal consultation. Lists of buyers of all the commercial minerals produced in California have been made available to producers upon request, and likewise the owners of undeveloped deposits of various minerals, and producers of them, have been made known to those looking for raw mineral products.

Since the publication of MINING IN CALIFORNIA was begun, current inquiries from buyers and sellers have been summarized and lists of mineral products or deposits 'wanted' or 'for sale' included in each issue.

It is important that inquiries of this nature reach the mining public as soon as possible and in order to avoid the delay incident to their quarterly publication in MINING IN CALIFORNIA, these lists are now issued monthly in the form of a mimeographed sheet under the title of 'Commercial Mineral Notes.' Those on the mailing list for MINING IN CALIFORNIA will receive the monthly 'Commercial Mineral Notes' as well.

EMPLOYMENT SERVICE.

Following the establishment of the Mining Division branch offices in 1919, a free technical employment service was offered as a mutual aid to mine operators and technical men for the general benefit of the mineral industry.

Briefly summarized, men desiring positions are registered, the cards containing an outline of the applicant's qualifications, position wanted, salary desired, etc., and as notices of 'positions open' are received, the names and addresses of all applicants deemed qualified are sent to the prospective employer for direct negotiations.

Telephone and telegraphic communications are also given immediate attention.

The Bureau registers technical men, or those qualified for supervisory positions, and vacancies of like nature, only, as no attempt will be made to supply common mine and mill labor.

A list of current applications for positions and 'positions open' is carried in each issue. Notices are designated by a key number, and the name and address corresponding to any number will be supplied upon request, without delay or charge of any kind. If desired, recommendations may be filed with an application, but copies only should be sent to the Bureau, to avoid possible loss. Registration cards for the use of both prospective employers and employees may be obtained at any office of the Bureau upon request, and a cordial invitation is extended to the industry to make free use of the facilities afforded.

POSITIONS WANTED.

11– 9 Mining Engineer or Geologist. Education, School of Mines, Liege, Belgium, and Royal School of Mines, London. Three years' experience on European Geological Surveys. Speaks English, French, Greek, Bulgarian and Russian fluently, and some German. Salary open—moderate to start.

11–10 Any mining. Twenty years' experience as Chief Engineer, Mine Captain and Second Engineer, South Africa and West Africa fields. Age 40. Married. Salary, open.

11–11 Superintendent Mill or Mine. Technical education; sixteen years general experience as miner, assayer, foreman and superintendent of concentrating, amalgamating and cyaniding mills, etc.; also designing and erecting. Will go anywhere in western U. S. A. Age 48. Married. References. Salary wanted, $225, minimum.

11–12 Development Service. For companies not requiring full time engineer. Underground surveys; mine mapping; preparing stope sheets and assay plans; mine records, tonnage reports; cost estimates; reports on properties, and other engineering service.

11–13 Superintendent. Five years' experience. Specialty, installation and operation of quicksilver ore reduction plants. Age 39. Married. References. Salary, open.

11–14 Superintendent, Placer Mine. Twenty years' experience. Can do surveying. Age 46. Married. References. Salary wanted, $180 minimum.

11–15 Mining Engineer. Experience—various positions from miner to superintendent, since 1906. Age 41. Married. References. Salary wanted, $300.

11–16 Executive or Assistant Manager. Graduate University of Copenhagen. Two years with Nogadi Soda Co., Ltd., Br. East Africa. Age 27. Single. References. Salary wanted, $200.

11–17 Assayer. Eleven years' experience. Three years with last company. Age 45. Single. References. Salary, open.

11–18 Position in Pottery Industry. Eighteen years' experience as foreman and superintendent of plants, including much statistical, efficiency, production, selling and factory cost accounting. Age 39. Married. References. Moderate salary.

11–19 Working Mine Superintendent. Twenty-five years' general mining experience in Arizona, Colorado and California. First-class references.

11–20 Geologist. Two years' experience, laboratory and field. Age 25. Single. Salary wanted, start, $130. References.

11–21 Operating Mine or Quarry. Seven years' experience in Mexico and the United States. Age 34. Married. Salary wanted, $250 up. References.

11–22 Plane Table Man or Assistant to Oil Geologist. Technical graduate. Several years' experience in underground and surface surveying, field geology and paleontology. World War veteran. Salary, open.

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**Thirteenth Report (Third Biennial) of the State Mineralogist, for the two years ending September 15, 1896, 726 pp., 93 illustrations, 1 map. J. J. Crawford	----
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Fourteenth Report of the State Mineralogist, for the Biennial Period 1913–1914, Fletcher Hamilton, 1915:	
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Fifteenth Report of the State Mineralogist, for the Biennial Period 1915–1916, Fletcher Hamilton, 1917:	
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**Preliminary Report No. 8. A Review of Mining in California During 1921, with Notes on the Outlook for 1922. Fletcher Hamilton, 1922. 68 pp. Paper	----

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Bulletin. Reconnaissance of the Colorado Desert Mining District. By Stephen Bowers, 1901. 19 pp. 2 illustrations. Paper	Free
Commercial Mineral Notes. A monthly mimeographed sheet. April, May, June, July, August, September, 1923	Free

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**Register of Mines, with Map, Inyo County	----
**Register of Mines, with Map, Kern County	----
**Register of Mines, with Map, Lake County	----
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**Register of Mines, with Map, Nevada County	----
**Register of Mines, with Map, Placer County	----
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Register of Mines, with Map, Yuba County	.25
Register of Oil Wells, with Map, Los Angeles City	----

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**Mounted	----
**Unmounted	----
Map of Forest Reserves in California—	
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**Mineral and Relief Map of California	----
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**Map of Shasta County, Showing Boundaries, National Forests	----
**Map of Sierra County, Showing Boundaries, National Forests	----
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**Map of Tuolumne County, Showing Boundaries, National Forests	----
**Map of Mother Lode Region	----
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Map of Copper Deposits in California	.05
**Map of Calaveras County	----
Map of Plumas County	.25
**Map of Trinity County	----
Map of Tuolumne County	.25
Geological Map of Inyo County. Scale 1 inch equals 4 miles	.60
Map of California accompanying Bulletin No. 89, showing generalized classification of land with regard to oil possibilities. Map only, without Bulletin	.25
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Map No. 5—Whittier-Fullerton, including Whittier, West Coyote, and Montebello	.75
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DETERMINATION OF MINERAL SAMPLES.

Samples (limited to three at one time) of any mineral found in the state may be sent to the Bureau for identification, and the same will be classified free of charge. No samples will be determined if received from points outside the state. It must be understood that no assays, or quantitative determinations will be made. Samples should be in lump form if possible, and marked plainly with name of sender on outside of package, etc. No samples will be received unless delivery charges are prepaid. A letter should accompany sample, giving locality where mineral was found and the nature of the information desired.

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THE STATE MINING BUREAU

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FOR THE PURPOSE OF FURTHERING
THE DEVELOPMENT OF THE

MINERAL RESOURCES OF CALIFORNIA

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LLOYD L. ROOT,
State Mineralogist.

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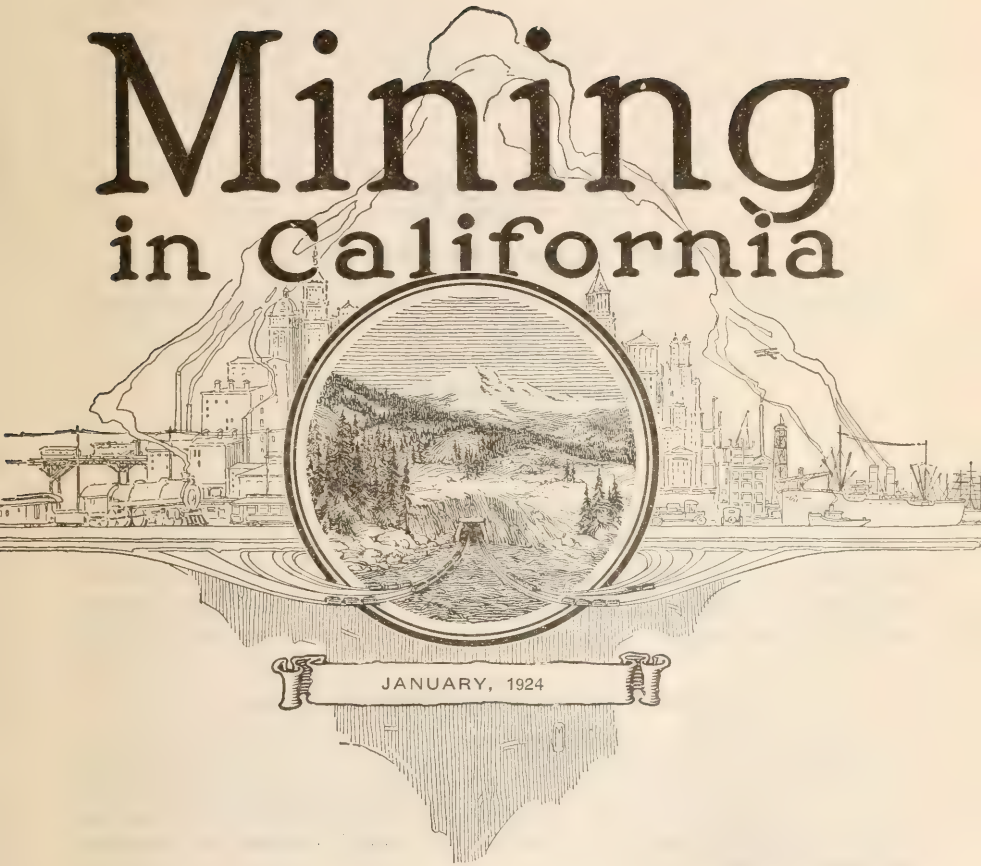
Branch Offices: Pacific Finance Building, Los Angeles; Sacramento, Bakersfield, Taft, Coalinga, Santa Maria, and Santa Paula.

Mining in California



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CALIFORNIA STATE MINING BUREAU.

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State Mineralogist

WALTER W. BRADLEY
Deputy State Mineralogist

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Note.—A detailed report of the activities of the Department of Petroleum and Gas is issued monthly by the State Mining Bureau, entitled 'Summary of Operations, California Oil Fields.'

CALIFORNIA STATE MINING BUREAU
FERRY BUILDING, SAN FRANCISCO

LLOYD L. ROOT State Mineralogist

Vol. 20 JANUARY, 1924 No. 1

CHAPTER OF

REPORT XX OF THE STATE MINERALOGIST

COVERING

MINING IN CALIFORNIA

AND THE

ACTIVITIES OF THE STATE MINING BUREAU

CALIFORNIA STATE PRINTING OFFICE
FRANK J. SMITH, Superintendent
SACRAMENTO, 1924

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CALIFORNIA STATE MINING BUREAU
LLOYD L. ROOT
STATE MINERALOGIST
OUTLINE MAP
OF
CALIFORNIA
SCALE
OREGON
NEVADA
MEXICO
PACIFIC OCEAN
SISKIYOU
MODOC
SHASTA
LASSEN
TRINITY
TEHAMA
PLUMAS
GLENN
BUTTE
SIERRA
MENDOCINO
NEVADA
LAKE
COLUSA
PLACER
YOLO
EL DORADO
SONOMA
NAPA
AMADOR
ALPINE
SOLANO
MONO
MARIN
CONTRA COSTA
SAN JOAQUIN
TUOLUMNE
SAN FRANCISCO
ALAMEDA
STANISLAUS
MARIPOSA
MERCED
SANTA CLARA
INYO
SAN BENITO
MONTEREY
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KERN
SAN LUIS OBISPO
SAN BERNARDINO
SANTA BARBARA
VENTURA
LOS ANGELES
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IMPERIAL
- LEGEND -
Mining Division Boundaries.
Mining Division Offices.

2--30619

PREFACE.

The State Mining Bureau is maintained for the purpose of assisting in all possible ways in the development of California's mineral resources.

As one means of offering tangible service to the mining public, the State Mineralogist for many years has issued an annual or a biennial report reviewing in detail the mines and mineral deposits of the various counties.

The weak point in work of this character has been that the results of field investigations were so long in preparation that they had lost much of their usefulness by the time they finally appeared in print.

As a progressive step in advancing the interests of the mineral industry, publication of the Annual Report of the State Mineralogist in the form of monthly chapters was begun in January, 1922, and continued until March, 1923.

Owing to a lack of funds for printing, quarterly publication was begun in September, 1923.

For the same reason, beginning with the January, 1924, issue, it has been necessary to charge a subscription price of $1 per calendar year, payable in advance; single copies, 25 cents apiece. 'Mining in California' will continue to be sent without charge to our exchange list, including schools and public libraries, as are also other publications of the State Mining Bureau.

Pages are numbered consecutively throughout the year and an index to the complete reports is included annually in the closing number.

Such a publication admits of several improvements over the old method of procedure. Each issue contains a report of the current development and mining activities of the state, prepared by the district mining engineers. Special articles dealing with various phases of mining and allied subjects by members of the staff and other contributors are included. Mineral production reports formerly issued only as an annual statistical bulletin are published herein as soon as returns from producers are compiled. The executive activities, and those of the laboratory, museum, library, employment service and other features with which the public has had too little acquaintance also are reported.

While current activities of all descriptions will be covered in these chapters, the Bureau will not discontinue its practice of issuing from time to time technical reports on special subjects. A list of such reports now available is appended hereto, and the names of new bulletins will be added in the future as they are completed.

The chapters will be subject to revision, correction and improvement. Constructive suggestions from the mining public will be gladly received, and are invited.

The one aim of the Mining Bureau is to increase its usefulness and to stimulate the intelligent development of the wonderful, latent resources of the State of California.

DISTRICT REPORTS OF MINING ENGINEERS.

In 1919–1920 the Mining Department was organized into four main geographical divisions, with the field work delegated to a mining engineer in each district working out from field offices that were established in Redding, Auburn, San Francisco and Los Angeles, respectively.

This move brought the Bureau into closer personal contact with operators, and it has many advantages over former methods of conducting field work.

To continue this system most effectively with the limited funds available for the present biennium, the Redding and Auburn field offices were consolidated and moved to Sacramento on June 1, 1923.

The boundaries of each district were adjusted and the counties now included in each of the three divisions, and the locations of the branch offices, are shown on the accompanying outline map of the state. (Frontispiece.)

Reports of mining activities and development in each division, prepared by the district engineer, will continue to appear under the proper field division heading.

Although the petroleum industry is but little affiliated with other branches of mining, oil and gas are among the most valuable mineral products of California, and a report by the State Oil and Gas Supervisor on the current development and general conditions in the state's oil fields is included under this heading.

SACRAMENTO FIELD DIVISION.

C. A. Logan, Mining Engineer.

NOTES ON MINING DURING THE YEAR 1923.

Although mint and smelter returns in 1923 show a falling off in actual production of gold in California from the 1922 figures, the past year has been a fairly good one for the gold mines. Production costs have remained high and the industry has suffered from a heavy labor turnover, but, in spite of these handicaps, development work has continued, new activities have been initiated and in the leading mining counties of the State and along the Mother Lode the outlook for increased activity and output in 1924 is most encouraging. The estimated production for 1923 is $13,250,000. Among the principal producers are the dredges of Yuba Consolidated Goldfields and Natomas Company of California; Empire Mine at Grass Valley; Carson Hill Gold Mines, Inc., at Melones; Sixteen to One Mine, at Alleghany; Plymouth Consolidated Mine, at Plymouth; North Star Mines, at Grass Valley, and Kennedy Mine and Central Eureka, in Amador County.

Amador County.

Recent developments in the deep mines in this county as well as at Carson Hill in Calaveras County and at Grass Valley, make it appear that those geologists who have maintained that gold quartz mines invariably become leaner as the depth of working increases, will have to qualify their statement by citing an ever increasing number of California mines that are exceptions to their rule. The limit of some of

these deep mines may be determined by the costs of operation, and not by a diminution in the grade of ore. The bottom levels of such mines as the Argonaut and Kennedy are showing strong fissures and very flattering prospects and it has recently been said that these deep Mother Lode mines are apt to be as rich at the great depths attained as they ever were. Of course it does not follow that all the mines along this 'Lode' will be as rich, at great depth, as there are special geological conditions encountered in every property.

Argonaut Mine. During the first four months of the year the shaft and adjacent workings were repaired, after which repairs and replacements were made on the hoist and the shaft was concreted to a depth of 40 feet. The lower levels were unwatered and milling was resumed about the middle of the year, first with 20 stamps and about the middle of July with 40.

The mine is opened to an inclined depth of 4800 feet. Just previous to the last fire the south drift on this level was showing a width of 20 feet of quartz, and ore was being developed along the vein in new territory south of the region that had marked the limit of good ore in the levels above. Current reports are that this region is giving satisfactory results.

Bunker Hill Mine came under the control of the owners of the adjacent Original Amador Mine this year and it was hoped that the two mines would be worked as a unit, using the Bunker Hill shaft to explore the lower part of the Original Amador, but nothing came of it.

Central Eureka Mine continued mining and milling throughout the year, but not on as high a grade of ore as the previous year. The workings reached an inclined depth of 4100 feet early in the year. Many improvements such as a new headframe, new rails in the shaft and shaft repairs have been made.

Fremont Mine. The mill at the Fremont Mine was put in operation the middle of March after Metals Exploration Co. had spent a long time in repair work and prospecting. The mine and mill have since been in steady operation. About the middle of August, Metals Exploration Co. gave up the property and a new company, known as Fremont-Gover Mines Company, was organized. The directors of the new concern are Edwin Higgins, Roy Elliott, William Colby, S. A. Holman, and E. E. Check.

Due to the fact that considerable ore had been previously developed in the mine, the recent operations have shown a low cost. The mill was handling about six tons per stamp per day in August with 35 stamps in operation on ore of ordinary Mother Lode grade. The company is at present selling stock and the mill is operating.

Kennedy Mining and Milling Company has sunk its shaft from the 4050 to 4200 ft. level (vertical) and has crosscut on the 4200 level recently, with the work still going on as this is written. A width of 20 feet where the crosscut went through the footwall vein has been reported to assay so well that the owners are greatly elated, more particularly since this came close on the heels of the last stock assessment. After passing through the footwall vein the crosscut was being continued through the horse toward the East Vein and had reached a

length of 70 feet when this was written. It was said this entire distance assayed well, but this has not been substantiated.

The Kennedy has suffered a number of interruptions to operation during the past year, and production has been much below normal.

Marklee Mining Company. Jos. L. Del Monte, president, Federal Bldg., Oakland, Cal. Organized to work the Marklee and Alturas Mines, five miles north of Volcano. According to early U. S. government reports the Marklee Mine began production in 1869 and for several years yielded good ore. A boiler, hoist and new headframe have been installed and the old shaft had been partly cleaned out and retimbered late in the fall, with work continuing.

Moore Mining Company has sunk the shaft at the Moore Mine 100 feet and has opened a new level at 640 feet, where the ore body was encountered on the south after about 70 feet of drifting. The difficulty of sinking and keeping the mill running with a single drum hoist was to be overcome by conversion to a double drum hoist, according to plans announced. Milling with 20 stamps was resumed the middle of July. The first clean-up thereafter showed an average yield of $6.82 per ton.

Old Eureka Mine was sold under foreclosure in July to Walter Harper of New York. This sale is the aftermath of the recent extensive operations about 1920, and the hope has been expressed that with the clearing up of the ownership there might be some action toward reopening.

Oleta Gold Mining and Milling Company has been doing some development work on the L. Smith property near Oleta and has lately been sinking a shaft.

Original Amador Mine was held in readiness for operation until late in the summer, when it was said plans for work had been given up.

Plymouth Consolidated Gold Mines have remained in steady operation during the year and have been one of the principal producers of the county. The operations reached a depth of about 4000 feet and a level was opened at 3850 feet early in the year. The deeper operations have been through a winze, but it has been planned to deepen the shaft if the prospects justify. William J. Loring, general manager. Stanley Arnot, superintendent.

PLACER MINES.

American Flats Gold Mining Company announced they would begin operation at Oleta in July.

Elephant Deep Hydraulic Mine was in operation as long as water lasted the past spring and it was stated that the cleanup amounted to $15,000. Preparations were under way in the fall for a resumption of work. The mine is in the Volcano district and has been worked under lease by Barone Bros. of that place.

Ludekins Hydraulic Mine in the Volcano district was also operated the past season.

Calaveras County.

COBALT.

During the past two years several samples of cobalt diarsenide (smaltite) with erythrite, have been brought to the attention of the Bureau. These apparently came from a single small prospect, which was visited in November, 1923. It is in the northwest quarter of Sec. 21, T. 4 N.; R. 14 E.; about a mile by trail from the Murphy-Sheep Ranch road and on top of a ridge at an elevation of over 3000 feet.

A surface cut 15 feet long and 3 feet deep had been made on a stringer of the ore. This had been only a few inches wide between a mica schist footwall and quartzite hanging wall, and had pinched out, so far as could be seen, both on the dip and strike. Only a few hundred pounds of ore had been found, but samples indicated it was of good grade. The claim was idle and the ownership uncertain. It was stated that some work was planned by R. C. Johnson.

COPPER.

Extensive improvements and additions, including enlarged power supply, have been under way at the properties of the *Calaveras Copper Company* at Copperopolis during the summer and fall. Actual production was started late in December.

GOLD QUARTZ MINES.

Apex Mining Company, 78 Bacon Building, San Francisco, Henry Hyde, president. This is a new stock company based upon the *Ford Mine,* one-half mile from San Andreas. The mine was formerly opened to a depth of 700 feet. The present company unwatered the workings to the second level, after cleaning out 60 feet of caved shaft. They report new work underground consisting of 182 feet west and 190 feet east on the 100 level. On this level on the west they found a vein on which they drifted 60 feet and crosscut 44 feet in vein matter. A portion 12 feet wide in the center of this is said to assay well. Some of the quartz seen in place by the writer shows free gold. This vein is a stringer lead in black and greenish schist, with talc on the walls. It strikes about N. 18° W. and in one part of the west workings dips west on account of local faulting, the normal dip being east about 62°. The fault gouge, where one portion of vein was thrust over the other, can be seen. The hanging wall part of the mine as explored in the east crosscut, shows a vein six feet wide, well mineralized with pyrite, 100 feet east of the shaft. It dips east about 50 degrees and is very tight with no gouge. In the next 100 feet, this crosscut shows several talc gouges, and an intrusive rock now changed partly to talc cuts off stringers coming in from the northwest.

The new company claims to have spent $18,000 to October 1, 1923. They have built 2½ miles of electric line and have installed motors for the hoist, pump and compressor. Four men were employed when visited November 9.

Bullion Hill Mining Co. (Bibl. Preliminary Report 8, Jan. 1922.) This company suspended work about the middle of the year at the Washington Mine, six miles north of Murphy. Time and money that should have been spent in the development of a promising property

were wasted in litigation between members of the company, and work stopped, according to local report, when ore above the adit level had been removed. The owner has taken steps to recover the property.

Golden Eagle Development Co. R. C. Johnson, 453 Frederick Street, San Francisco, has a lease and option to purchase Golden Eagle Claim from the owners, and has located three other claims adjoining, and has formed a stock company to work them. Claims are a mile east of Sheep Ranch, in the southwest quarter of Sec. 9, T. 4 N.; R. 14 E. Equipment includes a small steam engine and hoist, headframe, and shed.

An old shaft 70 feet deep near the center of Golden Eagle claim had been cleaned out and deepened 30 feet up to November 3. The vein shows a wide outcrop near the shaft but can not be traced far on the strike. It strikes northeast. At 100 feet depth the shaft shows a decomposed dike about 20 inches wide with five inches of bluish quartz on the hanging wall and 3 or 4 inches of quartz on the footwall. It is possible the shaft is in the hanging wall of the main vein and that a crosscut will be needed to reach the vein.

Jolly Tar Mining Company. Based on a lease and option to buy a patented quartz claim of the same name in Sec. 28, T. 3 N.; R. 13 E.; one-half mile from Altaville on the Esmeralda road.

When visited November 9 the property was idle and deserted and the shaft more than half full of water. One of the owners stated the shaft had been sunk about 325 feet and that during recent work a sudden flow of water had been opened, forcing the men out until a larger pump can be installed. The dump shows that all the work has been done in blocky amphibolite schist with meager seams of calcite and quartz. Crosscutting to the east is planned.

Morgan and *Melones Mines.* These mines are now operated as a unit by Carson Hill Gold Mines, Inc., William J. Loring, general manager. The group also includes *Calaveras Consolidated Mine.* The combined properties with their central milling plant, which has a monthly capacity of over 15,000 tons, are the only producing mines on the Mother Lode in the county at this time, and rank among the five largest gold quartz mines in the state as regards both gold output and tonnage handled.

The story of the rejuvenation of the Morgan Mine by Loring after an idleness of 20 years, and the purchase and successful operation of the Melones Mine by him in conjunction with the Morgan after the Melones Mining Company had closed their mine down on account of high costs, is an instructive illustration of the possibilities of deep mining on the Mother Lode.

Ore is being milled from the flat veins of the Morgan Mine and from the deep workings of the Melones Mine. The Melones workings have reached an inclined depth of 4268 feet, measured from the apex on New Year Claim. The lower levels of Melones Mine are reached by a crosscut and new 3 compartment shaft. The later developments in this mine showed again that good ore recurs in depth on this lode if finances permit sinking and exploration at sufficient depth.

The annual production for 1923 is expected to be about as in the past.

DRIFT MINING.

Considerable work is being done on the Central Hill-Vallecito channel system between Parrot's Ferry and Dogtown. These gravel deposits have never been developed extensively because the ancient channels here are below the present drainage, making it necessary to work the ground with shafts and pump the water. The channel course had never been definitely determined this entire distance and it appears that former ideas as to its exact course near Vallecito have lately been proven erroneous. The whole history of the geologic periods when the ancient gravels were deposited, was also much more complex than has been appreciated. The limestone bedrock has proven to be a factor of uncertainty due to the great susceptibility of the limestone to solution and the consequent tendency toward the formation of underground channels, caverns and mud seams.

Balaklava Mining Company. 912 Santa Fe Bldg., San Francisco. Fred Niebling, president; Lee Wilson, secretary. Based on the property including the Osborn and I.X.L. mines near the Vallecito-Columbia road about two miles from Vallecito and between the old Moffat workings on the southwest and Lombard and Sloane workings on the northeast.

There is an inclined shaft on the west half of the property. This shaft is about 400 feet deep on 27° incline, or 185 feet vertical, with a station at 375 feet. From here an old drift, now partly caved, is said to run about 100 feet southwest. Geo. Condon, superintendent, states that a winze sunk from a short crosscut off this drift showed gravel, but no further work was done to explore this gravel so it is not known if it is in place in a channel. The superintendent said it was their intention to run a drift north and east from the 375 ft. station in a search for the north rim. The gravel channel is said to have not been bottomed in these workings, and its depth, width and exact direction are uncertain and it would appear that estimates of probable tonnage of gravel and tenor of same are guesswork.

Equipment consists of gasoline engine, skip for bailing water and blacksmith shop. Seven men were employed early in November, 1923.

Bishop Estate. A. H. McKenzie, L. L. Richard, R. D. Skelley and Don Steffa are associated in prospecting this property to get information on the ancient channel preparatory to mining. They have a lease on 285 acres, and if the prospects warrant may organize under the name of Vallecito Western. At present they are prospecting with a Keystone drill on Six-Mile Creek just above the Angels Camp-Vallecito road crossing, and west of the supposed confluence of the Vallecito and Central Hill channels. Up to the first of November, 1923, they had drilled four holes, of which the first was on the north rim, and the second is said to have passed through 52 feet of rhyolite ash and cobbles and four runs of gravel. The other holes were on the south rim.

Should the results warrant them in opening the ground, they plan to work through two shafts, one near Six-Mile Creek and the other a mile west. There is thought to be about two and a half miles of old channel in the property.

The same partners worked from January, 1920, to June, 1923, at the north end of Vallecito in a search for the Central Hill Channel,

which had been thought to pass that way. Working through a shaft 192 feet deep, they report they did a total of 5300 feet of underground work. This included a drift 1150 feet long northeast on what Steffa terms a fault; also a drift 350 feet south, both from near the bottom of the shaft. They also drove both ways from a depth of 106 feet. A winze was sunk 110 feet below the bottom of the shaft and they report the fissure is about 18 feet wide at that depth. At the 192 ft. level the fissure was about 72 feet wide, but they were there about 100 feet below where the channel might be expected. There is said to be some pay on this latter level for a length of 600 feet, but no bottom. It appeared as if the gravel had been swept or dragged into the open fissure before the lava ash covered the surface. The bedrock here was limestone, and the experience in this case showed the uncertainty of mining an old channel on this formation.

Hesperides Mining Company. H. B. Patterson, president and general manager. This company is working a combined gold mine and gravel pit on the Crocker Estate property adjoining Wallace, on the Lodi-Valley Springs railroad branch. The equipment includes digging, elevating, crushing and screening machinery, besides gold saving equipment. The management reports that the gravel contains a few cents in gold per ton. Several sizes of gravel and crushed rock and pea gravel and sand are produced and a capacity of 600 to 800 tons a day is claimed, with a fair profit on the rock products besides the gold.

Jackrabbit Mine and *Purington Golden Treasure Mine* are north of the Victor Mine on Central Hill Channel. Geo. Werley of Angels Camp and F. R. Purington have been doing some work on these properties, but have not reported any production up to November, 1923. Werley stated they had struck gravel in the Jackrabbit near the old Monarch line and had also run about 70 feet downstream in the Golden Treasure but not in pay. The combined properties cover about 2½ miles along the supposed course of the channel. The old workings of the Jackrabbit Mine included a shaft 191 feet deep and drifts totaling 1700 feet or more, the work having been done about 25 years ago. Equipment includes a Cornish pump, centrifugal pump and 3-stamp mill. The gravel is cemented.

Slab Ranch Mine is between the Victor Mine and Bishop Estate. Wm. Graflin had begun work here in November, 1923. A hoist had been put up and a shaft had been started to prospect the Central Hill Channel. This shaft was down about 45 feet at that time.

Vallecito Consolidated. This mine is on the Bishop Estate property, which see. The original lessees who are now drilling near Six Mile Creek carried on extensive work through this shaft, as described above. The fissure carried pay gravel in small quantity for a length of 600 feet, but the operators did not consider it a large enough showing for the scale of operations they planned, so they subleased this ground to Chas. Sanguinetti and associates of Vallecito, who are continuing work and express satisfaction at the results obtained and the gravel in sight.

Victor Placer Mine has been described in the monthly chapter for January, 1923. The mine has continued operation steadily throughout the year and has been making a small production of gold. The gravel is cemented and has to be milled.

El Dorado County.

There has been little activity in the gold mines of the county during 1923.

Crown Point Mine near Diamond Springs was unwatered during the year but it is said nothing was done in the way of mining.

Grit Mine was abandoned by the Grit Gold Mining Company, who have transferred their operations to the *Vandalia Mine*, which they are rehabilitating at this time.

Gold Standard Mining Company, which had been prospecting just north of the old Zantgraf Mine on a vein parallel to the Zantgraf vein, quit work after sinking a shaft over 125 feet.

There was some activity and a small production from the Slate Mountain district, but in general only small prospecting was carried on.

Just below Georgia Slide on Canyon Creek an effort was made by Wm. Kelliher and Henneuse Bros. to operate a drag line scraper in the gravel and debris that had accumulated in the creek as a result principally of the old operations at the Georgia Slide mines. This equipment was found not adapted to the work and a gravel pump was later put in, but so far there has not been any production.

STRUCTURAL AND INDUSTRIAL MINERALS.

Limestone has become in late years the principal mineral product of the county. *The Mountain Quarries* of Pacific Portland Cement Co. have been producing annually several hundred thousand tons of limestone for use in making cement. *El Dorado Lime and Minerals Company* quarry on the railroad below Shingle Springs and *Newcastle Lime Company's* quarry near Rattlesnake bridge have produced ground limestone and burnt lime for various uses, the latter quarry having been in operation the present year. Besides the kilns it is equipped with a mill to grind limestone for use as a soil corrective and 'sweetener.'

El Dorado Slate Products Company is a recently formed stock company based upon the *Chadbourne Slate* property on the steep south side of Big Canyon, a mile and a half from Placerville station. The property contains 32 acres, mostly patented and is well situated for opening by a series of benches at different levels along the canyon side. The slate will have to be hoisted to the top of the hill, a maximum vertical distance of about 400 feet. Due to its nearness to the railroad, this quarry would have an advantage in hauling costs, as the other quarries are all considerably farther from transportation.

Two or more abortive attempts have been made to open the quarry and bring it to production, but the work done and the output have been trifling. Two openings were started, one 175 feet below the brow of the hill and the other near creek level. The slate opened appears to be of good grade, free from pyrite so far as could be seen in the limited workings and of quality similar to that from other nearby quarries. In the upper pit there is a width of 22 feet without quartz seams which do, however, appear on the hill farther south along the strike.

Stock in the project is being sold but to date there has been no work done at the quarry by the present company. John F. Armstrong of Sacramento is president of the company.

For some years past the principal production of soapstone from the northern part of the state has come from the western part of this county near Shingle Springs and Brandon.

Nevada County.

Due to the lower price now paid for silver and the failure of Nevada to bring in any rich new gold mines, many of the Nevada companies have moved their activities to the Grass Valley district and in the past few months that city has taken on some of the aspects of a boom camp. There have been numerous investigations made and options taken and in several cases work has begun. The movement began too late in the year to permit the recording of actual results at this time, but it is probable that Grass Valley is due to take a prominent place in eastern stock exchange transactions next year and some interesting results may be looked for if promised underground work is carried out.

It has been the conviction of those best acquainted with our California mining districts that our mines need more active and aggressive prospecting companies, and that if new capital could be devoted to deeper exploration of undeveloped territory, the mines would be found not wanting. In this regard the new companies will be doing a real service to the mining industry of the state if they can develop even a few new mines of merit from among the many prospects that have been lying idle around the Grass Valley district.

As most of the mines and prospects of the district have been described in a recently published report of this Bureau, only a summary will be given here to indicate the lively condition of the region.

The mill at the *Alcalde Mine*, four miles southwest of Grass Valley, was put in operation July 23 last following a very flattering little discovery of high grade ore. It has been in nearly steady operation since and some very satisfactory cleanups have been reported. George W. Root and Lloyd L. Root are directing operations.

Alta Hill. (See Grass Valley Gold Mines.)

Ancho Mine, in the Graniteville district, reported taken under option in July.

Arctic Mining Company with claims on Canyon Creek in the Washington district, has been crosscutting during the past summer.

Banner Consolidated Mines including the *Central Consolidated* and the *Norambagua,* have had some preliminary work done during the past summer.

Ben Hur Divide Mining Company of Tonopah, Nevada, took an option in September to purchase the *Ben Franklin* group 2¼ miles southeast of Grass Valley. Two known veins have been worked, the Alaska dipping east and the Ben Franklin west. The deepest working was on the Alaska claim which has an inclined shaft about 500 feet deep. The last previous work was in 1916. Work was begun promptly by the present lessees, cleaning out the old workings on the Ben Franklin.

Brunswick Mine was unwatered by the owners during the summer and development has been under way for several months. At the end of November the management announced that they had found what

they thought to be the Mill vein in the 1100 level crosscut and would start another crosscut from the 1300 level.

Eagle Bird Mine in the Washington district was in operation and ore was milled during the year.

Empire Mine has continued mining and milling at the usual rate during the year and will be the principal producer of the county.

The Grass Valley district has been employing about 1000 men, of whom about 400 were working at the Empire, and a nearly equal number at the North Star, and the rest at smaller properties. The quartz mines around Nevada City were idle till late in the year, when work began on the *Mayflower Group.*

Gold Wedge Divide Mining Company of Tonopah, Nevada, has taken a lease and option on the *Randolph Consolidated* property on the Wm. Grant Ranch, near Rough and Ready.

Golden Center Mine at Grass Valley has been leased with option to purchase, to M. K. Harr of Philadelphia, who is locally connected with the Grass Valley Gold Mines. It is stated that water is being removed from the shaft at this time with the idea of beginning work on the 500 level as soon as possible. The owners claim they left a good prospect on this level. This mine is equipped with a 20-stamp mill and considerable machinery. The price agreed upon will give the stockholders of the old company a handsome profit if the deal is completed.

Grass Valley Gold Mines, under the direction of M. K. Harr, president, and F. Sommers Schmidt, engineer, has been sinking a shaft on Alta Hill, near the old Hope shaft. This work had reached a depth of about 415 feet with crosscuts run several hundred feet at a depth of about 275 feet, when operations were halted late in December by lawsuits brought by the various property owners whose land had been held under option by the operating company. No important strike had been announced by this company up to the time work stopped, though it was said some quartz stringers had been crossed in the crosscutting.

Gould Mound Mine in the Rough and Ready section 2½ miles west of Grass Valley and containing about 100 acres, was reported taken under lease and option in May.

Hilltop-Nevada Mining Company. See Grass Valley Gold Mines.

Idaho-Maryland Mines continue under development by Metals Exploration Co. of New York. Early in the year a shaft section of about 1000 feet was completed to give more direct connection with the lower levels and reduce cost of operations. The mill has been used at times for sampling.

Normandie Mining Company has continued prospecting their property near the Alcalde Mine and have reported an encouraging showing found while crosscutting.

North Star Mines curtailed milling operations early in the year on account of a decrease in ore reserves caused by a lagging in development work in recent years and failure of some of the ground to come up to expectations. They began prospecting below the 6300 level through a winze.

Osceola Mining Company has been drifting on the vein in their property near Rough and Ready and have reported good prospects.

Republic Mine in the Graniteville district was operated this year and some ore was being crushed during the summer.

Twin Sisters Mining Company, J. W. Howard, General Manager, 420 Forum Building, Sacramento. Organized in Nevada to work the Twin Sisters Group of three claims and three claims on the Independence vein in sections 12 and 13, T. 18 N.; R. 10 E.; just south of Middle Yuba River and at the south end of the Alleghany district. The claims are 24 miles from Nevada City via Snow Point.

Five men have been employed during the fall of 1923. Two adits were run on the Twin Sisters vein by former operators. No. 1 adit strikes the vein 155 feet from the portal and continues on it 280 feet southward. No. 2 adit is 120 feet below No. 1 and was reported 946 feet long when new work began. For the first 300 feet it is in disturbed ground near the surface, then on the fissure for 385 feet, passing into footwall for 100 feet, and the balance of distance on the vein. The property has not been visited by the writer, and the above details are from a report by E. C. Uren, who states that the vein averages 18 inches to 50 inches wide for the last 160 feet. Since new work started some arsenopyrite ore has been found and good prospects have been reported.

The Eureka ditch crosses the Gold Beater claim 370 feet above No. 2 adit and offers a source of cheap power, 1600 feet of pipe being needed.

PLACER MINES.

The tunnel of the *Gold Lead Placer Mine* had reached a length of 1950 feet and 12 raises had been put up by the middle of the year. Oscar L. Coflin, manager.

Malakoff Leasing Company is engaged at North Bloomfield in exploring the deep channel in part of the old Malakoff diggings. When it was found that the shaft was not yet deep enough to bottom the channel, it was decided to sink 75 feet further, giving a total inclined depth of about 350 feet. An air compressor was taken in this fall to expedite work. W. S. Weaver is manager.

Penn-California Mining Company. Their mining claims are in the Willow Valley district and have been described in our past reports.

Their main adit was driven 2700 feet to a point 600 feet vertically below the center of the ridge then 1500 feet eastward. Raises were put up at 1100 feet (air shaft) 1500, 1800 and 2300 feet from the portal and Hoge reports that 1000 feet of drifts were run from these raises to explore for gravel. Gravel was found, but although a few hundred dollars worth of gold was washed out in the course of prospecting, the manager reports that as a whole the gravel was not of such grade nor of sufficient quantity to justify breasting. It was not confined to a definite channel, but appeared spread out and thin. The last 1500 feet of adit was in slate bedrock, the rest in granodiorite. The adit was in large part double track size.

Recent work has been directed to finding the Buckeye vein which Hoge said he expected to encounter during November or December this

year. He hoped this ledge would reveal ore that would partly pay for carrying on development. The claims are equipped with a 15-stamp mill and sawmill and nine men were employed this fall. Arthur W. Hoge, manager.

Time has not permitted visiting the placer mines of the county this year.

Liberty Hill Hydraulic Mine was in operation a short time early in the year and a small cleanup was made.

Sidney Wood has been preparing for hydraulic mining at You Bet.

COPPER.

Western Copper Company is a consolidation of numerous old mines in the Spenceville district. Eugene Aram of Sacramento and Otto Woehler of Spenceville are forming the company and are part owners of the holdings. The Golden Eagle, Index and Legion claims (formerly the *Mineral Hill M. & S. Co.*) Arkansas Traveler, Last Chance, Jackson, 16 to 1, San Francisco, Philadelphia and American claims, all patented, and 10 unpatented claims adjoining, are included. The claims are 2 to 3 miles north of Spenceville and 14 miles by road northeast of Wheatland. Many of the claims have been noticed in our last county report, and space does not permit a detailed listing of all the shafts and tunnels driven in the past.

Last Chance shaft is 240 feet deep with only a few feet of drifting at different levels. Mineral Hill adit on Index claim is a crosscut 498 feet long, and is said to cut five veins. In Golden Eagle claim a vein is exposed showing carbonate ore in shallow shafts. The dump of the old Bitner shaft, sunk in the sixties and reported to be 160 feet deep, on this claim, shows pyrite ore, which was evidently too low grade to ship at the time. The Jackson claim has been prospected by the California Tunnel, 950 feet long, which is in the wall rock two-thirds of the distance, then enters the vein through a crosscut, near which a raise was put up 60 feet and a winze sunk 40 feet. From here to the face stopes were put up 10 to 25 feet and according to report considerable good ore was taken out.

Recently work has been resumed cleaning out this last named tunnel, and Woehler reports some good assays. Samples shown as having come out in this work carry chalcopyrite, pyrite, galena, other sulphides and malachite.

BARITE.

Democrat Barite Mine near the Liberty Hill hydraulic mine has produced several thousand tons of off-color barite during the past summer for use in making lithopone. The ore has to be treated by a special process to render it sufficiently white for this use.

F. W. Bradley's Barite property north of the old Spanish Mine and six miles from Washington, was undergoing development during the summer. High cost of delivery of ore to the railroad, on account of the distance, has held back the exploitation of this property.

Placer County.

Mining has been rather dormant in this county also the past year.

American Bar Quartz Mine has been under development during the year and a flume has been built to bring in water to furnish power for the mill. The mine was described in Report XVIII of the State Mineralogist, 1922, June chapter.

Canada Hill Mines have been prospected under the direction of Fred Vahrencamp. The property was described in Report XVII of the State Mineralogist, 1920.

Daniel Webster Mine near Michigan Bluff has been active.

DRIFT MINES.

Baltimore Mine adjoining Forest Hill, has been rather extensively prospected by the owners, George McAulay and J. Steiner of Auburn, during the past two years, the work being done on contract by local miners who at the same time are mining gravel in other parts of the mine. The primary channel in this property was cut off by the later and deeper Blue Lead channel, which here was a wide stream with apparently gently sloping rims. The recent work has been done with the idea of picking up the other segment of the primary channel, and to do this they have run across the course of the Blue Lead, beneath the gravel, and have raised when they thought they were far enough on the other side to be beyond the later trough. The Blue Lead was found wider than expected, and the primary or Forest Hill channel has not yet been picked up.

Glen Mine has been in operation on a small scale. On the basis of royalty paid, the property is reported to have produced $44,000 during 1922, but the yield for the current year has not been reported yet. As far as known, it has been the only productive drift mine in the county for some time, if we except a few prospectors' lone operations. The mine is described in our Preliminary Report 8.

Gold Dollar Mining Company continues prospecting the Blue Eyes claims near Duncan Canyon and beyond the Glen Mine, south of the Last Chance road. They also began this year the prospecting of the *Jack Robinson* drift claim, adjoining the Blue Eyes.

Gold Dollar or Blue Eyes adit has reached a length of 2200 feet. An air and exit shaft part way in is used also for ventilating with a blower. Near the face of the main adit crosscuts were run 150 feet each way and a raise was put up 20 feet from the top of which they ran 110 feet ahead. An electric lighting plant has been installed.

At the Jack Robinson claim a heavy run of secondary gravel, which was revealed by former work but never bottomed, is being prospected. This adit is now (Dec. 15) 280 feet long and Moss reports the floor is running into bedrock. Work at both properties is under the superintendence of F. A. Moss, who is convinced that there is a primary channel in the Blue Eyes that has been cut by the later Jack Robinson channel, and that this primary channel fed the fabulously rich early day diggings of Duncan Canyon and its tributaries, one of which was

worked up to near the site of the present Blue Eyes adit. The Blue Eyes claims cover some 2800 acres along a lava covered ridge which is two miles wide in places and the work by Moss is the first sustained effort to explore its possibilities, although many small 'breakouts' of gravel have been worked along the ridge. Moss reports that his company has made the first payment on the Blue Eyes property. This ridge, as well as the opposite ridge on the other side of Duncan Canyon contains large gravel deposits that have hardly been scratched. Some of these appear from such work as has been done, to be small and rich as in the case of the Glen; others are large and lower grade, but if intelligently worked may exhibit pay streaks that will be worth following.

The *Guggenheim dredge* operating in American River southeast of Applegate has been the principal gold producer of the county the past year.

Plumas County.

This county remains in the lead in the state as a copper producer. As a by-product of the copper mining operations there is also an important production of silver, running from $150,000 to $175,000 a year of late. The copper mines also contribute a large part of the gold produced in the county at present.

Engels Copper Mining Company operating Engels and Superior mines, is the largest metal mining company in the state in point of tonnage of ore handled and gross value of the products. The production of copper by this company has reached as much as a million and a quarter pounds per month during the current year. For the six months ending July first the company produced, according to their report, 7,398,106 lb. of copper, 82,852 ounces of silver and 1318 ounces of gold. On this basis if production does not diminish the year's output will be close to two and a half million dollars in gross value, making allowance for a slight decrease on account of the decreased price of silver. The mill handles about 1000 tons of ore daily, and a total crew of about 500 men is employed. They stated that their operating cost was about 11.45 cents per pound of copper for the first half of the year.

Feather River Copper Company's claims near the Engels Company's Superior Mine were bought this year by Engels Copper Mining Company.

Beardsley Copper Mining Company had completed a mill and were reported to be running an electric power line from the main line in Indian Valley to their claims near Taylor Lake, a distance of about 8 miles, during the past summer.

Walker Copper Mine, operated through a subsidiary by *Anaconda Copper Mining Company*, enlarged their flotation plant during the summer and it was expected that the new units would be ready for work in October. During most of the year they operated at a capacity of 250 tons a day.

Shasta County.

On account of the closing of the former office of the State Mining Bureau in Redding and the consolidation of the work with that of the former Auburn office at a new office in Sacramento, there has been an increased amount of work to be done both in the office and in the field and there has not been as much opportunity for field work in the northern end of the state since June as was desired. It may be said, however, that gold mining has been very quiet in that section, with little gold production for the year except from the dredgers and placer mines, most of the work recently begun at the quartz mines having been in the nature of prospecting, as will be seen from a short notice of the operations that have come to our attention.

The *American Mine* in French Gulch district was being prospected during the summer and fall and good ore was reported late in the year.

At the *Bonanza Gold Dollar Mine* just north of the town of Shasta, a 5-stamp mill was put up in the fall to crush an accumulation of a few hundred tons of ore.

Ganim Gold Mines Company was incorporated in August to continue operation of claims near Stella, and a small mill was reported to have been put up, but the mine was idle in October. The property is described in our 1922 report, December chapter.

Niagara Mine in French Gulch district was being prospected during the summer by H. M. Thompson.

Preparations were being made to unwater the *Reid Mine* in July, in anticipation of the reopening of the Kennett copper smelter. This mine was in operation 15 years previous to the closing of the above smelter and the quartz ore was used as flux at the smelter.

Uncle Sam Mine was being prospected during the summer by the *Colma Copper Company*. An unusual accident occurred at this mine in June, when lightning struck and destroyed the compressor building and a part of the machinery.

After eight years operation along Cottonwood Creek in the Gas Point district, *Shasta Gold Dredging Company* was cleaning up the last of its proven ground in that region in September, and it was doubtful if work would continue much longer.

COPPER.

Interest in mining in this county the past year has been centered upon the operations of the large copper mining companies and the possibilities of their resuming work. With an increase early in the year in the price of copper, and the anticipation that this increase would hold, work was started to put several of the mines in shape for ore production and two of the larger companies put crews of men at work getting the smelters ready. However, the price of copper dropped again about the time the mines and furnaces were ready for production, with the result that conditions were very uncertain toward the end of the year. In spite of the fact that the sales of copper during the past

month (November) and for several months this year, as indicated by the records of deliveries from refineries, have been record breaking, the price of copper delivered remained about thirteen and one-eighth cents a pound the middle of December. This is a price at which most California copper mines find little inducement to operate unless their ores carry sufficient gold and silver to help out.

Afterthought Copper Company's properties were sold under foreclosure late in the year to Forest P. Tralles of St. Louis, assignee of the executors of the will of J. F. Milliken of St. Louis, who, it is said, had loaned the company over a million dollars. A compromise between the Milliken interests and the bondholders is reported to have been arranged whereby the bondholders will receive a few cents on the dollar, leaving the stockholders out.

Mountain Copper Company's smelter at Martinez was fired July 26 after an idleness of four years and the first copper was turned out August 15. In September 125 men were employed at the *Iron Mountain Mine* and the oil flotation plant at Minnesota had also been put in operation. However, in November the Iron Mountain Mine had been shut down and the future operations were uncertain.

All the holdings of the *Trinity Copper Company* in Shasta County were attached in August by the Federal National Bank of Boston. The best known of the claims of this company is the *Shasta King*, nearby the Balaklala, and seven miles west of Kennett. The property had been idle a number of years.

United States Smelting, Refining and Mining Company put a crew of over a hundred men at work at the *Mammoth smelter* in August to prepare for reopening the smelter. At the same time, 65 men were put at work at the *Mammoth Mine* and about half as many at the *Keystone* and *Balaklala Mines*. Late in November one furnace was reported in operation, but there have been no opportunities for field trips to the district the past month, so it is not known whether work will be continued or not.

BARITE.

Loftus Barite Mine was being prospected the past summer by H. C. Austin who is planning to buy the property. It lies about 2 miles in an air line east of Castle Rock. Austin has been considering the installation of a tramway, as the claims lie in rough country. The surface extent of the barite outcrops is said to be very large and a depth of about 50 feet has been reached in prospecting. The color of the rock varies from white to gray.

COAL.

An adit was being driven in October on a coal prospect on the *Lon Luce property* in section 20, T. 33 N., R. 1 W.; a little over a mile from Oak Run postoffice. A. Stevens of Oak Run was in charge.

At the time of visit the adit had been driven 43 feet and showed at the face a width of five feet of coal, of which several layers appeared more lustrous and harder than the rest, but nearly the entire width was coal, the seams of clay being narrow. The quality of the material had improved rapidly after leaving the surface. It is jet black in color

and looks like a better fuel than the ordinary run of California lignite, approaching sub-bituminous and not checking and slacking as fast as the brown lignite, though it soon shows the effect of exposure to the air. The coal bed dips east and north about seven degrees, has a sandstone and shale roof and a shale floor. The tunnel was being run a little south of east, and water was beginning to show a little at the face. On account of the direction the work was taking, it was becoming a flat incline in which it would no doubt be necessary to soon arrange for handling the water. There was no time to make an examination of the enclosing strata for fossils that might show the age of the coal, but although there is some uncertainty, the coal may be Cretaceous.

Surface outcrops of coal have been noted in a belt some ten miles long, according to local people, but for the most part these outcrops have not been prospected, although the U. S. Geological Survey comments on some coal prospects in the Ingot region, in the Ione formation. The region appears worthy of closer investigation on account of this coal and it is hoped that there will be an opportunity for field work there by the Bureau next spring.

The greatest handicap to development of the prospects is the long haul to the railroad, the nearest railroad point now being Palo Cedro, 17 miles away. It would be necessary to develop a good sized field of merchantable coal to justify a railroad, unless some lumber company should decide to exploit timber lands in that section.

Sierra County.

The Alleghany district, and particularly the Sixteen to One Mine, has produced most of the gold mined in this county during the past year. Due to the fact that some of the other large producers of the state will show a decrease in yield this year from various accidental causes, it seems probable that the Sixteen to One Mine will rank among the three largest gold quartz producers for 1923. This record is all the more notable because it is being made with a normal working crew of 30 to 40 men. Relatively small production has also been made by the Plumbago, Tightner, Rainbow, Kate Hardy and Irelan Mines during the year, so far as reports late in the year indicate, but these figures are apt to be changed at any time by discoveries of rich bunches.

All the mines and prospects that were accessible at the time were described in the October chapter of our 1922 report. Some changes since are noted below.

Work at the *Brush Creek Mine* was suspended after two explosions of gas had resulted from workmen penetrating the old workings.

A mill has been put up at the *Contact Mines* during the past summer, and underground work has continued.

Some prospecting of the *Edwards claims* at Chips Flat was contemplated.

Gold Canyon and *Rainbow Extension* claims were taken under one management and work continued during the latter part of the year.

A new hoist was being put in at the *Irelan Mine* late in the fall.

Kate Hardy Mining Company has been running the mill on their mine just below Forest and report that the proceeds have been contributing toward the cost of prospecting.

The lease and option on the *Oriental* and *Dead River Groups* of claims was abandoned by *Tonopah Mining Company* after considerable unproductive work. Very soon afterward, Bert Austin and associates took the lease and option and began work.

Prospecting work has been going on at the *North Fork* claims near Forest.

The *Plumbago Mine*, which was being reopened at the time of the last report, has since been taken under option by *Alleghany Mining Company*. Some rich specimen rock was reported to have been found by the former operators just before the transfer was made.

The *Rainbow Mine* produced a bunch of rich ore during the year, but not sufficient to repay the outlay for prospecting, according to the company's engineer.

The *Sixteen to One* completed many surface improvements and additions to the mill during the year, and as noted above remained the principal producer of the county.

In the Downieville district there was not much mining activity aside from the seasonal work in the many small drift mines, where parties of two or more men are employed each summer. There have not been any important developments, however, in this branch of mining in the district recently.

Bessler Bros. make an occasional small crushing of ore in the mill on their mine just outside the town of Downieville.

City of Six Mine comprises seven claims, unpatented, lying at the head of Slug Canyon two miles west of south of Downieville by trail. It is being developed under lease and option by A. E. Hodgkinson, 801 Lane Mortgage Building, Los Angeles.

Development work on the quartz claims to October of this year consisted of two adits. No. 2 or upper adit was run as a crosscut 100 feet then on the vein formation and the serpentine contact southward for 800 feet. The lower adit, which is 360 feet lower than No. 2 and 960 feet north of it, has been run about 1200 feet on or near the serpentine contact. The vein varies in width from a foot or less up to 4½ feet, and in general is parallel to the contact of serpentine and Calaveras formation. From the two adits a few raises and crosscuts were run and there are two possible ore zones indicated, both raking south at a steep angle. These two shoots have produced some high grade ore similar to that from the Alleghany mines, and the property is similar geologically to the mines there. The greatest depth reached by the lower adit is about 485 feet.

Dan McGonigal, J. T. Lane and H. G. Smith were cleaning out and reclaiming the old workings of the *Finney* (or *York*) *Mine* just outside of Downieville during the past fall. The four claims and millsite of this property lie on both sides of the river. There is an old shaft 150 feet deep, with some drifting and stoping at a depth of 100 feet, and also an adit 350 feet long in which they were clearing a caved section. The mine has a record of some past production of high grade.

Gold Bluff Mine a mile from Downieville was taken under bond and option in the fall.

Tuolumne County.

QUARTZ MINES.

Many prospecting projects that were under way during the year in this county have been suspended; numerous new ones have taken their places, but in point of size of operations and number of men employed, the county has suffered a loss. The fixed price of gold relative to the cost of other commodities, which have been maintaining a high general price level, has especially affected the quartz mines on the Mother Lode in this county, as the ores that have been mined on that lode in this county have been as a rule low grade, taken as a whole. Before the war many properties kept running on rock that averaged $3 to $5 a ton and a recent perusal of old reports showed there were about 400 stamps in operation in the county in 1913 and 1914. In November, 1923, there was only one mill, containing 12 stamps, in operation on the Mother Lode in the county.

Alabama Mine. Work on this property, which had been carried on by the *Tonopah Mining Co.* during the year 1922, was suspended last spring. The claim was prospected through the Crystalline shaft, six hundred feet deep. Drifting was carried under the old Alabama shaft on the 600 level to prospect for the downward extension of ore.

Belmont Shawmut Mine closed down early in November, 1923. This was the last large mill operated on the Mother Lode. The owners returned to do some work after the Belmont Mining Company quit.

Crystalline Mine. Work was suspended in this property near Jamestown in the summer.

Casa Madera Gold Mines Syndicate, a Nevada corporation, has under lease and option a number of claims in the Basin Slope district, 20 miles by road and steep trail from Sonora via Confidence, three miles being by steep trail, or 8 miles from Tuolumne over a steep road. J. H. Sharpe, president of the company, Hearst Bldg., San Francisco. The claims are owned by John Nash and Rooker and adjoin the old Lewis Mine, once productive. They are near the contact of a gabbro intrusive and the extremely hard slaty quartzites and micaceous schists of the Calaveras formation. The intrusive is exposed on the mountainside just north of the workings and shows a sheeted zone the plane of which strikes northwest and dips 45° west.

The upper or No. 1 adit has been run east about 300 feet on a tight seam without quartz or gouge although the operators claim some assays. This is about 800 feet below the summit of the hill. A short way inside the portal of this adit, a crosscut has been run on a joint fissure striking about south, to follow a small bunch of sulphide ore that formed around the junction of the two joint seams. On the hillside about 100 yards south of the mouth of this adit and about on the line of the crosscut if produced, a small shallow prospect hole shows hard quartz carrying galena and other sulphides. There are no definite walls or gouge here, but there appear to be two systems of joint planes in the schist, one striking southeast and dipping vertically, and the other striking west of north and dipping 40° west. No. 2 or lower adit, 100 feet vertically below No. 1 was 60 ft. long on Nov. 3 and

showed the formation at the face similar to No. 1 adit, but the rock carries considerable sulphide.

A milling plant was being installed just below No. 2 adit when visited. It is to contain a ball mill of 40 tons capacity and 2 Plat-O concentrators, and 35 h.p. motor to run the mill. All this machinery was on the ground, as well as a 10 x 10 in. air compressor run by 50 h.p. motor at the lower adit and a 20 h.p. gas engine and 1-drill compressor at No. 1, with a tramway for supplies from the top of the ridge to the mill. Electric power was brought three miles from Confidence during the summer. The company has broached the idea of getting a water supply by running the upper adit ahead to tap the old mine workings nearby. This would be an uncertain and expensive method. If ore has been found on the surface of the claim as reported, it appears that erosion must have lain bare one of the west-dipping joint planes, which coincides with the present surface of the hillside in places. If this has occurred, the almost inevitable result would be an overestimate of the amount of ore available. The amount of work done had not yet justified a mill. Twelve men were employed in November, of whom three were working underground.

Clio Mine. Clio Vindicator Mines Co. A new surface plant is under construction at this mine, ½ mile south of Jacksonville on Tuolumne River. A new headframe is up and hoisting is to be done directly to the surface dispensing with the old adit. A new 10-stamp mill is being prepared for to replace one lost by fire.

Cherokee Mines, Consolidated, of Modesto has been doing some work at the *Donella Mine at* Arastraville and have also reopened the old adit on the Cherokee Gravel Mine, a mile and a half north of Tuolumne and are reported to have hauled some cemented gravel for a test run at the Columbus mill.

Erin-go-bragh Claim. During 1923 J. L. Bryson and associates have sunk a shaft 92 feet deep on this claim at Stent. Early in November the claim was idle, but it was stated that a few rounds of crosscut had been run and that work had stopped only a few weeks before. The crosscut was required on account of the shaft being flatter than the vein, but it could not be learned if the vein had been picked up.

Experimental Mine. Conlin Bros., Columbia, owners. Lately this mine has been taken under a ten-year lease with option to purchase by L. L. Coffer and F. L. Mitchell, who formed a stock company. Wolfley and Schank have taken an option on the majority of stock and work had begun in November with shaft repairs. The geology and workings of the mine are briefly described in Preliminary Report 8. This mine was being profitably worked in 1854, when a mill of 8 square stamps with wooden stems was put up and used to crush rich ore from near the surface.

Harriman Mine has lately been taken under lease and option, which were later transferred to A. G. Fraser and J. Hibbard of Los Angeles.

Heslep Mine. This old Mother Lode mine at Quartz has lately been leased to J. A. Keyes and associate, their lease embracing, however, only the section from the surface to 300 feet in depth. Keyes was

foreman at the mine at the time of the big cave in 1912, when a length of about 300 feet on the north end was lost, and he knew of good ore that had been left in the upper workings. The Heslep vertical shaft is about 50 feet south of the caved ground and is being used by Keyes. The stamp mill has been moved from the Patterson Mine near Tuttletown and 10 stamps have been erected and are in use, besides which two stamps are occasionally used.

Cost of mining and milling are low on account of the special conditions and the short distance ore is hoisted. Ore value at the same time is satisfactory, and will leave a very handsome margin of profit if the ore continues to mill as well as in October and November. Keyes states this ore shoot is about 260 feet long and six feet thick, and is in the Whitford vein which lies between the Heslep and Bull Quartz veins.

Hudson and *Calhoun Pocket Mines* near Sawmill Flat have made a small production of gold during the year.

Red Cross (Omega) Mine which was reopened for a short time during the summer has been closed down and is idle at the end of the year. Little more than unwatering and repair work was accomplished.

Some work has been done at the *Spring Gulch Mine* since July of this year. The shaft was cleaned out and repaired to the 200 ft. level, and crosscutting on this level is reported to have exposed a hitherto unexplored vein, which lies in the footwall of the Marshall vein, the one formerly worked. The operators planned to drift on this new vein. The mine is about five miles southeast of Tuolumne and was not visited.

A little work has also been done during the summer at *Temescal Mine* 2 miles from Confidence. Two men were employed.

DRIFT MINES.

Monarch Mine is near Confidence. *Monarch Gravel Mining Co.*, Jerry Casey, secretary, 510 Page street, San Francisco. The company has kept at work since the 1920 report. There are now (Nov., 1923) 3500 feet of tunnel and crosscuts, mostly main tunnel. A shaft was sunk 135 feet deep on 25° incline at the face of the main tunnel and is reported to show coarse gravel. A winze level 100 feet below the main tunnel has also been run about 100 feet. A new shaft to furnish air and a second exit was being sunk in November to connect with the main tunnel. The gravel noted above as having been found below the main tunnel had not been prospected and nothing is known yet as to its extent.

Sledge Mine is about 4 miles by road from Confidence. The property has been prospected and worked in a small way for many years by the Sledge family but as far as could be learned without much output. It was drilled by *Tuolumne Deep Channel Mining Company* about 1913. A tunnel was also run 200 feet or more by former operators. The last company, which suspended work during the present year, is said to have spent about $35,000 on the property. Several new buildings were put up and the tunnel was extended to a total length of 600 feet.

Gravel shows in the face of the pit, near where the tunnel enters. The course of the tunnel turns west, northwest and north and strikes rim gravel near the face. This is apparently an intervolcanic channel, most of the sand and gravel being green with very little quartz. No work was done after striking the gravel. About a quarter of a mile ahead of the face of the tunnel presumably along the supposed course of the channel, a shaft had been started, but was nearly full of water at time of visit and had apparently not reached gravel, judging from the material on the dump. As no crosscutting nor drifting had been done in the gravel, the width, depth and direction could not be judged except by surface indications.

Springfield Tunnel and Development Company have continued to work their mine on a small scale. When the work had reached the old shaft where such a fine prospect had been found several years ago that they were led to great exertions and expense to reach it with a tunnel, it is reported the rich ground was found to be limited in extent, and they found mostly lower grade gravel surrounding it.

MARBLE.

Bell Marble Company, office address S. P. Building, San Francisco. The quarry at Columbia was being worked again in November after an idleness of six months. A crew of six men is employed. A Sullivan double channeling machine has been installed and a new 50-ton stiff leg derrick has been erected.

The market for marble is reported good but the demand is said to be principally for sawed slabs. The company is now selling stock to finance a marble sawing mill at West Berkeley. The Bell Marble Company has helped to build up a new industry in California raw material and has experienced the satisfaction of establishing the high quality of its product in competition with eastern and other marbles.

Columbia Marble Company continues the operation of its large marble quarry on the south side of the Stanislaus River canyon north of Columbia. This company has its own marble sawing mill and has been a steady producer for many years.

GRANITE.

Sonora Granite Company has a quarry on the Rablen Ranch in Sec. 14, T. 1 N.; R. 15 E.; three miles from a shipping point on the Sierra Railway. J. E. Sasek, manager, Jamestown.

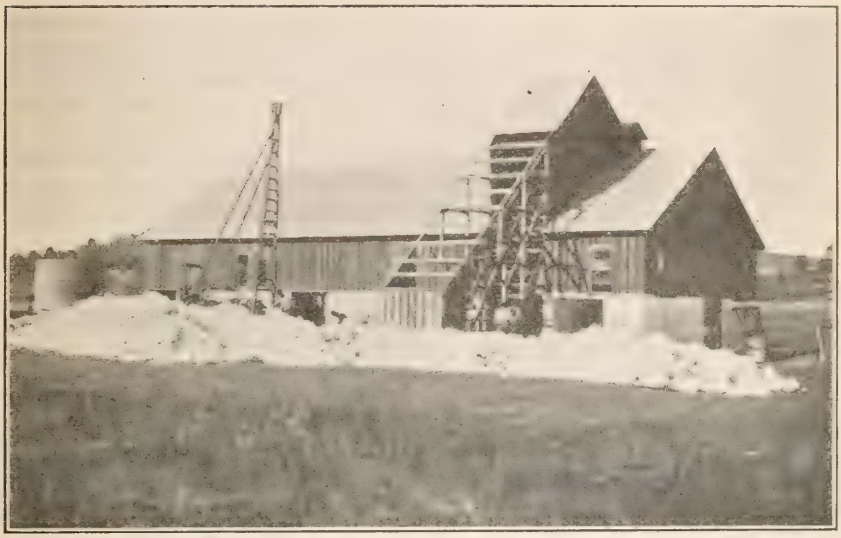
The stone is a pleasing dark granodiorite. They have brought in electric power to the quarry and have an air compressor, a few small buildings with accommodations for ten men, and some small tools. A few carloads of the stone have been shipped during the two years of desultory work, but the quarry has been idle since last July.

MAGNESITE.

The *Gray Eagle Magnesite Mine* near Chinese Camp has been taken over under lease by H. R. Vail and John P. Maxwell, 820 Syndicate Bldg., Oakland. When visited in November last, they were building a calcining plant (see photo) on the Sierra Railway at Chinese Camp

station. The kiln is of 15 tons calcined product daily. The ore is hauled from the mine, a distance of two miles, by motor trucks.

The vein is developed through an adit which crosscuts it at 310′ in, thence a drift has been run 50′. This level is at a depth of 98′ below the outcrop, and 34′ below the upper drift, which was driven from the bottom of the shaft. In the stope the vein shows 8′ to 10′ in width. Mining of the ore is being done under a contract.



Vail and Maxwell calcining plant at Chinese Camp, Tuolumne County, California, for handling magnesite from the Gray Eagle Mine. Photo by Walter W. Bradley.

SAN FRANCISCO FIELD DIVISION.

C. McK. Laizure, Mining Engineer.

REVIEW OF ACTIVITIES IN 1923.

During the past year the Redding field division office was discontinued and the former Auburn field division office moved to Sacramento. This change necessitated a redistricting of the State and some change in the counties assigned to the present three district offices at Sacramento, San Francisco and Los Angeles, respectively.

Del Norte, Humboldt and San Luis Obispo counties were added to the San Francisco field division, and Glenn, Colusa, Yolo, Sutter, Sacramento and Mono counties were placed in the new Sacramento district.

The net result was that Mariposa is now the only gold mining county of any importance in the San Francisco field division.

METAL MINING.

Mariposa County was not visited during 1923, but reports indicate that it has shared fully in the general revival noted in gold mining activities throughout the State, and that the outlook for continued improvement of conditions in 1924 is favorable.

The only other metal of importance produced in this district is quicksilver. Some interesting speculations regarding a possible increase

in the use of quicksilver have developed since the reports of experiments with the Emmet mercury-steam boiler system have been made public in the technical press.

An experimental installation of this system on a commercial scale was made by the General Electric Company in the plant of the Hartford Electric Light Company, Hartford, Conn., and its successful operation demonstrated. Theoretically, this system permits increased efficiency of about 100 per cent over steam alone. At the test installation the increase in output of electric power per pound of fuel was practically 50 per cent. With boilers especially adapted to the system and other refinements, it is expected that an increase in efficiency of 80 per cent over the present practice of steam-power plants will be reached.

Such a wonderful saving would lead to the conclusion that in a short time mercury will be used in all steam-power plants; however, the following figures will show that the world's production of quicksilver is far too small to meet such a demand.

According to the Engineering and Mining Journal-Press[1] "the Emmet boiler at Hartford holds about 30,000 pounds of mercury. The total production of mercury in the United States in 1919 was 1,601,000 lb., enough to equip only fifty-three boilers like the one already equipped, which has developed about 1500 k.w. or nearly 2000 h.p. In 1922 the mercury produced in the United States had fallen to 478,000 lb., or enough to equip sixteen boilers of the size of the Emmet installation at Hartford. This United States production was, to be sure, only about one-fifth of the average production for nearly twenty years; nevertheless, it is clear that these twenty years have skimmed the cream from our deposits.

We have a tentative figure of the total amount of boiler horsepower used in the United States in the mining industries at 2,258,000 h.p., which, taking the amount of mercury required for the Hartford boiler, would require altogether nearly 34,000,000 lb. of quicksilver, which is more than the total amount of quicksilver produced in the United States in the last twenty-one years—1902 to 1922 inclusive. But the total amount for all purposes in the United States is 18,000,000 h.p., whose equipment would require 270,000,000 lb. of mercury!

The world production of mercury in 1921 was only 4,451,000 lb., enough to equip only 148 boilers of the size of the Hartford plant! The total world's production for fourteen years from 1908 through 1921 inclusive was 110,337,000 lb., or less than half what would be required to change the high-pressure steam boilers of the United States alone to the mercury system."

As a further illustration of the revolutionary character of this system, it is said that the mercury used in the Hartford plant boiler cost about $16,000. This represents a considerable sum of money, but officials of the Hartford Electric Co. expect their coal bill to be cut in half by the installation of this boiler system, and their coal bill in 1922 was about $1,500,000, showing that they would save the cost of the mercury, at that price, in about eight days. Even with a much higher price for mercury, such an installation would prove economical in many cases. The mercury is used over and over again and need not be replaced.

[1]Eng. & Min. Jour.-Press, Vol. 116, No. 25, page 1057, Dec. 22, 1923.

It is quite evident from these figures that, if the demand for quicksilver for mercury-boiler power purposes grows, the lack of supply will send quicksilver prices soaring, and even this use in only a comparatively few boiler plants is likely to cause an immense increase in the price of the metal.

The principal producers in 1923 were the New Idria Quicksilver Mining Co., the New Almaden Co., Inc., and the Cloverdale mine of the Western Mercury Co. Mercury produced was about 75 per cent greater than the 1922 output.

Announcement has been made by Mr. Andrew Rocca, president of the Western Mercury Co., of the sale of the Cloverdale mine to H. W. Gould, et al.

The Helen mine, situated near Middletown, Lake County, has been purchased by Ludwig Graefe and A. Romaine.

A small production of manganese ore was recorded from San Joaquin and Stanislaus counties.

NON-METALLIC MINERALS.

Although the mining of metals is limited, the mineral products of the twenty-five counties in this division approximates 25 to 30 million dollars annually, or twice the total gold production of the State. The products are chiefly those minerals classified as fuels, structural materials, industrial materials and salines; and they include petroleum, natural gas, coal, brick and tile, cement, granite, lime, magnesite, sand and gravel, crushed rock and other miscellaneous stone, asbestos, pottery clay, dolomite, gems, gypsum, diatomaceous earth, limestone, mineral paint, mineral water, silica, sulphur, magnesium salts, potash, common salt and a few other minor minerals.

The mining and marketing of these products differ widely from metal mining in general and especially from gold mining. The gold producer has an unlimited market for his product at a fixed price of $20.67 per ounce, while the production of the structural and industrial minerals, fuels and salines is on a competitive basis. In the case of large mineral deposits of comparatively uniform composition, mining operations acquire many of the characteristics of a manufacturing industry. For aiding in the development of the mineral industry, reports upon the activities of going concerns of this character are of less value than are data on undeveloped deposits and new discoveries.

Fresno County, the principal mineral products of which are petroleum and natural gas, leads in value of production in this district. At the same time 'wildcat' drilling has continued more or less steadily in over half of the twenty-five counties, but to date no new commercial production has been established. That there are possible producing areas in this district, yet unproved, is unquestioned concerning both petroleum and natural gas.

Lively interest has been shown in the coal deposits of the State and development in this district has been carried on in Mendocino and San Benito counties, with additional activities probable in Contra Costa, Alameda and Monterey counties. A report upon the Eel River district in Mendocino County, where development work has been particularly active, was published in Report XIX of the State Mineralogist, Chapter IV, September 1923.

Coal investigations have taken the form of the possible utilization of California lignite in the production of pig-iron and steel in the electric furnace under the Driscoll patents. This is a process in which the volatile gases are driven from the coal and used in a gas engine to generate the required electric current. The carbon remaining is utilized to reduce the iron ore to metallic iron (sponge iron), which is then melted in the electric arc. The apparatus comprises a combination rotary kiln and electric furnace and the process is continuous. Small scale tests have shown California lignite to be suitable for this process. Others have investigated the low-temperature distillation of the lignite under a German patented process with the production of a semi-coke briquette, said to be an ideal smokeless domestic fuel, and other by-products. Still other investigators are figuring on the manufacture of calcium carbide (CaC_2) from lime and lignite coal. Apparently, the time is not far distant when the coal deposits of California will be developed to a much greater extent than at present; the better grades being used for domestic and steam fuel, in competition with imported coal, and the lower grades as powdered coal, in the manufacture of producer gas, or in one or more of the other industrial processes outlined above.

The demand for building materials continued active during 1923 and the established cement plants in this district, one each in Contra Costa, Solano, Santa Cruz and San Benito counties, enjoyed a prosperous year.

Pacific Portland Cement Company started the construction of a 2000 barrel per day unit of a new cement plant, located on San Francisco Bay near Redwood City, approximately at the site of the construction and launching during the war of the concrete ship, Faith.

The wet process of manufacture will be used. Two of the principal raw materials, oyster and claim shells, and clay, will be obtained from the bay bottom by a suction dredger, and conveyed to the plant. These shell deposits are said to be practically inexhaustible. The plant is expected to be completed by July of this year. Its location gives it the advantage of direct water and rail shipment for the finished product; while at the same time the principal raw materials are at hand.

It is reported that the Guadalupe Portland Cement Company expects to build a plant six miles southwest of San Jose, which will have an initial capacity of 2500 barrels per day. An immense hill of limestone is said to have been acquired in the vicinity of the proposed plant.

Yosemite Portland Cement Co. began construction of a large cement plant at Merced. Limestone occurring near El Portal will be utilized.

MAGNESITE.

Magnesite production, which is confined almost entirely to the San Francisco field division, showed a healthy growth during 1923. Several old properties were re-opened and one new deposit was worked.

The following data on the active magnesite properties in the district were prepared by Mr. Walter W. Bradley, deputy State Mineralogist, as the result of a short field trip.

Napa County.

Maltby No. 2 Magnesite Mine, C. S. Maltby, Humboldt Bank Bldg., San Francisco, lessee. The lease covers the old *Blanco* and the *Snowflake* mines, owned by the Tulare Mining Company, the first-named

having been operated by that company during 1917 and 1918. They were among the first magnesite mines to be worked in California, shipments having begun in 1891 and continuing for ten years at a rate of over 1000 tons per year. They are in Sec. 28, T. 8 N., R. 4 W., M. D. M. about two miles south of the old Chiles mill in Chiles Valley.

Since taking over this property in February 1923, the present lessee has driven a new adit in the Blanco ground 1000′ long which crosscuts the vein at 78′ on the dip (or 53′ vertical) lower than the bottom level of the former operators. Drifts have been run 100′ north and 165′ south, the vein showing an average of 6′ in width. The ore is being broken down by overhand stoping, and the small proportion of waste is sorted in the stopes, by forks and by hand.

Calcining equipment consists (see photo) of a rotary kiln, 3½′ inside diameter, by 50′ long, driven by a 6 h.p. gas engine and oil fired. The

Calcining plant at Maltby No. 2 Magnesite Mine, Chiles Valley, Napa County, California. Producing dead-burned magnesite in a rotary kiln. Photo by Walter W. Bradley.

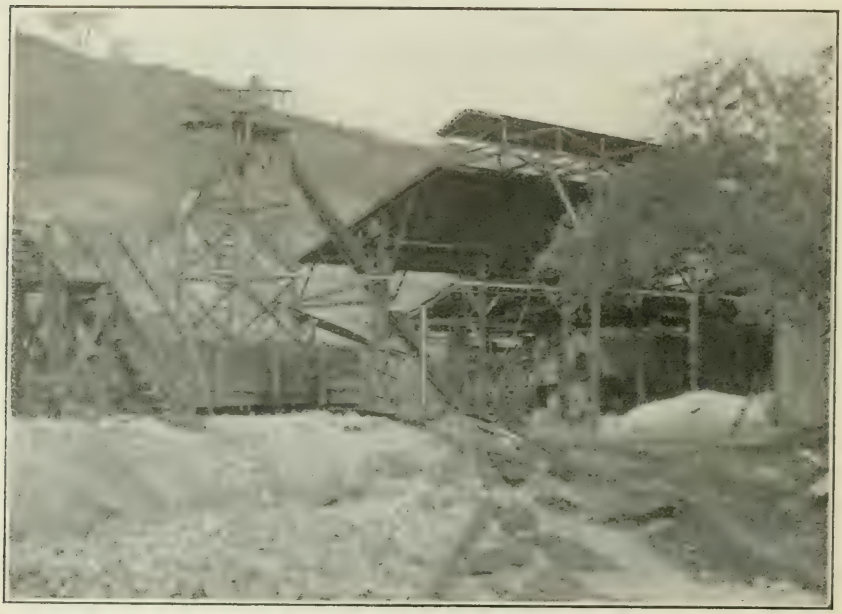
ore is crushed to pass 1-inch mesh before charging to the furnace, and is dead-burned for refractory purposes. The output of the furnace is 15 tons of calcined material per 24 hours. This rotary kiln was formerly in use for quicksilver reduction at the Bella Union quicksilver mine near Oakville in the same county. The calcines as discharged from the furnace are raised by a bucket elevator and run over a sheet-iron chute to the bunker, from which the motor trucks are loaded which haul the product to the railroad at Rutherford. Maltby states that he is having a ready sale, mainly on the Pacific Coast, for the dead-burned magnesite which he is producing here and at the Sampson mine in San Benito County, which he is also operating.

The *White Rock* magnesite mine in Pope Valley, operated by C. S. Maltby of San Francisco under lease during 1921-1922 was closed

down early in 1923 and the movable equipment transferred to the Blanco mine in Chiles Valley. It is stated that the orebodies of the White Rock were bottomed at a depth of 300 feet below the outcrop.

San Benito County.

The *Sampson Magnesite Mine* (known also as *Maltby No. 3*), west of Idria, is being operated under lease by C. S. Maltby, Humboldt Bank Bldg., San Francisco. The six vertical kilns formerly in use at this mine have been replaced by a rotary furnace 7′ by 80′ (see photo), operating at 1½ minutes per revolution. It is oil-fired and is producing 35 tons of dead-burned magnesite per 24 hours. The ore is crushed to ¾-inch mesh before charging, and 2⅓ tons of crude ore are required



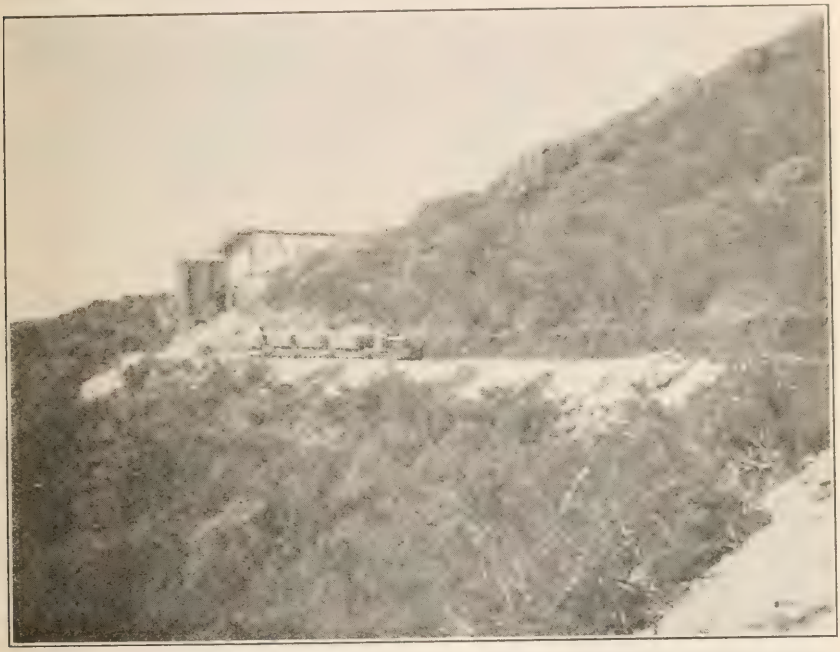
Calcining plant at the Sampson Magnesite Mine, west of Idria, San Benito County, California. Producing dead-burned magnesite in a rotary kiln. Photo by Walter W. Bradley.

for 1 ton of calcined. Steam power is used. Fuel oil is obtained from the pipe line of the Associated Oil Company at Mendota, there being a pumping station on the line at that point. The calcined ore is hauled by trucks to the railroad at Mendota.

As the orebody is on top of a ridge, the ore is broken by quarrying operations, and carried to the furnace by a Painter aerial tram, 5000 feet in length, having 16 buckets and being gravity operated. Jackhammer drills are used in the quarry. The compressor is driven by a 4-cylinder gasoline engine which formerly did duty in a Packard automobile. At the time of our visit (in November, last) it was certainly shooting merrily along on all four with a sharp bark out there on the open hillside without any muffler to worry it.

Santa Clara County.

The *Western Magnesite Company's* properties (known also as *Maltby No. 1* Mine) 33 miles southeast of Livermore have been operated under lease by C. S. Maltby, Humboldt Bank Bldg., San Francisco, since 1919. Many improvements have been made in the plant equipment, and new orebodies have been developed. The earlier underground operations were due east from the furnaces, and some ore is still being drawn from that portion of the property. Later developments have been towards the north and northwest from the older workings. While none of the north-end stopes have as yet reached the size of some of the older south-end orebodies (there was one, 300′ long x 50′ wide x 300′ high;



Tramming ore from north end workings at Maltby No. 1 Mine (Western Magnesite Development Co), on Red Mountain, Santa Clara County, Cal. Photo by Walter W. Bradley.

and another 200′ long x 150′ high x 30′ wide), some are over 20′ wide in places. The ore is of the same, white, high-grade character.

Ore from the north end is trammed around the hill (see photo) to the loading bunkers of the main aerial tram (of which there were two). When visited in November 1923, preparations were being made for the installation of a third aerial tramway, at the north end, in order to eliminate the long haul around the hill. A total of 150–200 tons of ore per day was being delivered to the furnaces, of which 40 tons was being mined at the south end, 30 tons from the extreme north end, and the balance from the main north workings. A new 4-inch pipe line was being laid direct to the north end to serve those workings with compressed air, in place of the line from the south end around the hill.

Pressure is maintained at 100 pounds at the compressors (two 50 h.p. Chicago Pneumatic, direct-connected to oil engines; also a Doak compressor as extra stand-by) and at least 90 pounds at the mine.

There are four upright kilns which burn the lump ore, and a Scott fine-ore quicksilver furnace which handles the fines. The ore as it comes from the mine is dumped on grizzlies set with a 1¼ inch opening; and the through material passed over a ¾-inch screen. The plus ¾-inch material goes to the Scott, and the minus ¾-inch to the waste dump as it contains mostly impurities. There is a Thwing electric pyrometer on the Scott furnace, by which the temperature is maintained at 2100° F. The calcines are drawn each hour, and an output of 20–24 tons per day obtained. The upright kilns are drawn every 2 hours, and their output totals 50 tons daily for the four. The burned lump ore is carried by a belt conveyor to a trommel with 1-inch apertures. The waste and off-colored magnesite are picked off the belt. The unburned cores after passing out of the trommel are hauled back to the main ore bin and re-burned in the kilns. Steam for atomizing the fuel oil is provided by two boilers, of 100 h.p. respectively. There were 14 motor trucks in service, hauling the calcined magnesite to the railroad at Livermore.

Tulare County.

Magnesite mining in Tulare County at the present time is practically confined to the several properties operated by the Sierra Magnesite Company, and to the Hoff-Harker lease on the old Harker or Porterville Hill mine.

Harker Mine. This property is owned by Mrs. Barngrover, Porterville, widow of Chas. S. Harker, and is at present under lease to Hoff & Harker. From 1915 to 1921 it was operated by the *Porterville Magnesite Company* and a large tonnage of ore mined, a part of which was calcined before shipping. It is two miles from the railroad at Porterville. During 1922 the property was operated under lease by the Sierra Magnesite Company, the ore being calcined in their furnaces at Porterville.

When visited in November, 1923, the rotary kiln was not in use, the present lessees confining their work to a vertical kiln of 15 tons calcined daily capacity. The product is shipped for plastic purposes. There is a small crushing plant, the equipment of which includes a hammer mill and a buhr mill for grinding the calcined material, although not being utilized at the time. The ore is being mined from the veins on the north side of Porterville Hill and hauled by motor trucks around to the furnace, which is on the south side of the hill.

Sierra Magnesite Company. This company was organized in 1920, and took over all of the important producing properties in the vicinity of Porterville, which they still retain with the exception of the Harker Mine (Porterville Magnesite Company) which, however, they operated during 1922. The Sierra company now owns in fee the properties described in preceding reports of the State Mineralogist [1] under the following names: Rex Plaster Company, Lindsay Mining Company, Tulare Mining Company, and mineral rights of the Oakland Magnesite

[1] Report XV, pp. 919–940, 1917; Report XVIII, pp. 528–535, 1922.

Company on 80 acres adjoining the Harker Mine on the north. This company also has a lease on the magnesite deposits on the Gill ranch adjoining the Oakland ground on the north. The first three groups adjoin and are in the Success district 7 miles east of Porterville. The Oakland-Gill groups are on the north of Porterville Hill 3 to 4 miles northeast from the railroad station at Porterville. At present, mining operations are confined mainly to the 'Tulare' ground, and portions of the 'Lindsay' and the 'Gill Lease' properties, the last-named being worked under a contract by Ed. Cramer. All calcining is done in rotary furnaces at their plant in Porterville (formerly American Refractories Company; also American Magnesite Company a subsidiary of International Magnesite Company). Ore from the Success district is brought in by rail over the branch line of the Southern Pacific Company, and from the others by motor truck.

The National Kellastone Company, of which the Sierra Magnesite Company is an associate (being controlled by the same financial interests), has one of its stucco plants here, where stucco mixtures are prepared for sale to contractors and material dealers. All of the technical control work of the National Kellastone Company is carried on at Porterville in the physical-test and chemical laboratories. Both of these laboratories are especially and completely equipped for such work. Because of the high summer temperatures, there is a below-ground basement room under the physical-testing building for use in the summer months, so that fairly uniform temperatures may be had for testing throughout the year.

Because of their careful technical control a uniform product of guaranteed behavior can be delivered. Their three commercial grades, with approximate chemical analyses are as follows (it being understood that the guaranteed physical tests are of more vital concern than a specific chemical composition):

'Sierra Standard.' White or light gray color when ground; MgO 83%–85%; CaO (under 4% total; 1.5% active); Al_2O_3 & Fe_2O_3 under 1%; SiO_2 up to 8%. Ignition loss 2%. Used for finish-coat stucco.

'Tulare A.' Cream color; MgO 85%–87%; Al_2O_3 & Fe_2O_3 3%; CaO (3% total, 1½% active); SiO_2 5%–6%. Ignition loss 3%. For flooring finish coat; also some for stucco.

'No. 20' or 'Base Coat' (also called 'No. 20 B.C.'). Color varies, dark cream, light brown, etc. MgO 80%; CaO 3%; Al_2O_3 & Fe_2O_3 about 4%; SiO_2 12%–14%. Ignition loss 4%. For base coats, both in stucco and floors.

Fine grinding of the calcined material, in preparation for stucco and plaster mixtures, is accomplished in 12 buhr mills in two banks, so that 85% will pass 200 mesh.

In November, 1923, there were 75 men employed in the mine, and a total of 49 in the plant, laboratories, and office, including 9 in the National Kellastone unit.

OTHER NON-METALLIC MINERALS.

An effort to increase the use of agricultural limestone, gypsum and other so-called mineral fertilizers is evident, and among the new operators in this district are the Mt. Diablo Lime and Marl Co., Walnut Creek, Contra Costa County, and the Mission Lime Marl Co., of Irvington, Alameda Co.

Various colored rocks, when crushed and sized, are used as a 'dash' coat on stucco for exterior finish and for roofing. There is a good demand for hard, bright-colored material. Obsidian was produced for this new use during 1923, the production coming from near St. Helena, Napa County.

The foundry men of America have raised a fund for carrying on detailed tests and research work on samples of sand which are being used or which may be thought suitable for foundry molding use. The tests are being made under the supervision of the Engineering Division of the National Research Council, with the cooperation of State Geologists and the U. S. Geological Survey.

In order that the producers and users of molding sand in California might benefit from this investigation, the State Mining Bureau has cooperated to the extent of collecting samples from all known deposits and reporting upon their character, size, method of working, ownership, etc.

Samples from two producers in the San Francisco field division were procured and included in the total of twelve samples sent from this State. These two were from the deposit of the Del Monte Properties Company, near Carmel, Monterey County, and from the George Small deposit, on the Alameda Creek road, near Decoto, Alameda County. The Del Monte Properties Company produce sand for a variety of uses, but the George Small deposit is strictly molding sand.

A new plant for the recovery and production of various magnesium salts from the bitterns remaining after the precipitation of common salt from sea water was completed in 1923 by the Industrial Chemical Corporation, and is now in operation. The plant is located on the property of the Arden Salt Works near Newark, Alameda County; the bitterns from the Arden Salt Works being taken under contract. E. M. Vail is manager, Newark, California.

Much of the San Francisco division engineer's time is taken up in routine office duties and in replying to written and verbal requests for information relative to all phases of the Mining industry.

After the discontinuance of the monthly publication of 'Mining in California' in April, the service formerly offered 'Producers and Consumers' in this publication was continued by issuing a monthly mimeographed list of current inquiries for deposits and tonnages of minerals 'wanted' and 'for sale,' under the title of Commercial Mineral Notes. Apparently these lists have been of considerable value to those looking for a source of supply and to prospective producers seeking a market, as the State Mining Bureau has been advised of a number of transactions closed through its aid, or under negotiation.

It has also been noted that these listings are closely watched by many large and responsible firms, who form an increasing percentage of those investigating offers. Requests for various minerals come from the manufacturing centers in the eastern states, a few from foreign countries, and many from local firms and individuals. Only deposits in California, or tonnages originating therein, are intended to be listed for sale.

During the year 303 parties seeking a market were listed; there being 88 different products offered by them, and 152 separate 'wants' were listed, which included requests for 102 different mineral products. The larger part of the 'wants' was for non-metallic minerals of the

structural, industrial, fuel and saline groups, with a lesser number of inquiries for gold and other metal mines.

Inquiries for arsenic ores, clay, magnesite, coal, manganese, limestone, montmorrillonite, quicksilver, sillimanite, andalusite and cyanite were comparatively frequent. Other minerals wanted included zeolite, lepidolite, gilsonite, flint, epidote, beryl, amblygonite, alunogen, asbestos, molybdenite, jasper, as well as the more common minerals.

With very few exceptions, all of the minerals wanted are known to occur in the State, but as yet some of them have not been found in commercial quantities. In many cases this may be due to lack of knowledge of the valuable non-metallics on the part of prospectors. Sillimanite, for which there is a keen demand, would scarcely attract the attention of one not especially searching for it, as much of it resembles an ordinary worthless rock. The only deposit so far being mined in the United States is in Mono County, California, but it is quite certain that other deposits of commercial size will be found, and, if so, they should prove valuable to the discoverers. Sillimanite is used in the manufacture of high-temperature and high-tension electrical insulators and spark plugs. That produced here at present is being shipped to Detroit, Michigan. It is worth about $.05 per pound, or $100 per ton, as mined.

LOS ANGELES FIELD DIVISION.

W. B. Tucker, Mining Engineer.

Imperial County.

Shipments of pumice are being made from a deposit owned by J. H. When, G. E. Miller, and D. S. Underwood of Niland. The deposit is located near Niland, and it is reported that during the month of August, 1923, seven cars were shipped to Chicago.

Inyo County.

CERRO GORDO DISTRICT.

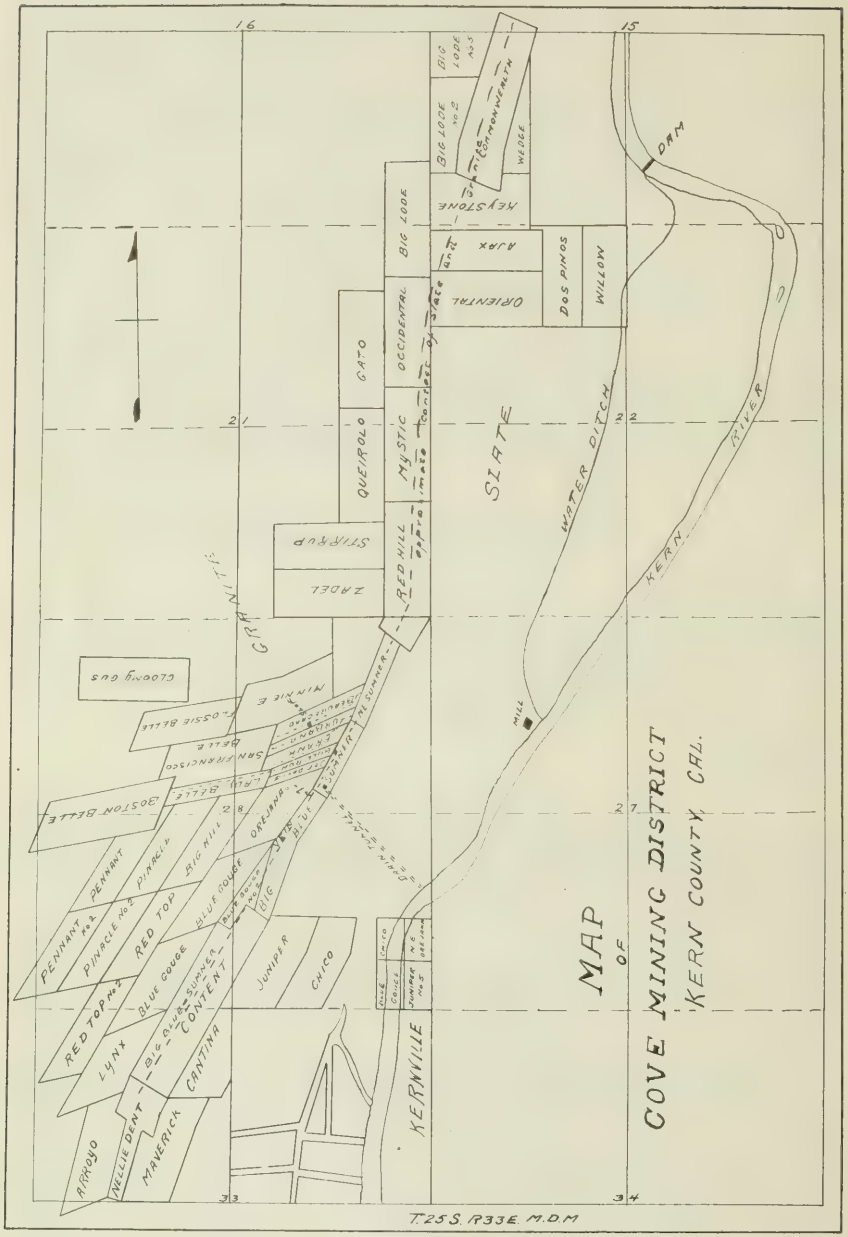
The Cerro Gordo Mines Company reports that a new ore body, carrying high grade silver values, has been encountered at a depth of 1000 feet in the old Union Mine. The vein is said to have a width of four feet.

Queen of Sheba Group of Mines, consists of nine claims located in the eastern slope of the Panamint Range of mountains, about 40 miles northeast of Zabriskie, a station on the Tonopah and Tidewater Railroad.

Owners: *New Southerland Divide Mining Company*, of San Francisco. The property has recently been leased to the *United States Smelting Refining and Mining Company;* main office, 55 Congress Street, Boston, Mass.

The ore occurs as replacement ore bodies in limestone and is rich in galena, lead carbonates and silver sulphides. The ore is said to average 15 per cent lead, and 8 ozs. of silver per ton. It is stated that 6500 tons of sorted ore shipped to the smelter near Salt Lake City averaged 40 per cent lead and 20 ozs. in silver per ton.

It is reported that the United States Smelting, Refining and Mining Company expect to start mining operations at an early date.


MAP OF COVE MINING DISTRICT KERN COUNTY, CAL.
T.25 S. R33 E. M.D.M.
KERNVILLE
SLATE
WATER DITCH
KERN RIVER
DAM
MILL
GRANITE
BIG LODE
KEYSTONE
WEDGE
MAX
ORIENTAL
DOS PINOS
WILLOW
GATO
OCCIDENTAL
QUEIROLO
MYSTIC
STIRRUP
ZADEL
RED HILL
MINNIE
GLOOMY GUS
SAN FRANCISCO
BELLE
BOSTON BELLE
PENNANT
PINACLE
RED TOP
BIG HILL
BLUE COUGE
ORENANA
RED TOPPER
LYNX
CONTENT
CANTINA
MAVERICK
NELLIE DENT
R. ARROYO
JUNIPER
CHICO
INDIO
COVELL
JUNIPER
16
15
21
22
27
28
33
34

Kern County.

COVE MINING DISTRICT.

The Cove Mining District is situated 42 miles north of Caliente, near the town of Kernville. The mines are at an elevation of 2600 to 3000 feet above sea level in the foot hills of the High Sierras. The district is connected by a good mountain road with Caliente, on the Southern Pacific Railroad, which is the nearest railroad point.

History: The first discovery of gold in this region was made by a member of General Fremont's party in 1851, in Greenhorn Gulch. In 1861, Rogers and Old discovered gold on what is known as the Beauregard vein, near Kernville. The discovery of the Beauregard, Jeff Davis, Lady Belle, Bull Run, and other mines of this region, led to the formation of the Cove Mining District.

The Beauregard Company installed a mill of eight wooden stamps, and it is stated that their production was from twelve to fifteen thousand dollars per month. At a depth of 65 feet, the vein was five feet wide, and the ore is said to have milled $70.00 per ton.

The original claims located on the Jeff Davis, Bull Run, Lady Belle, Frank, Urbana, and Beauregard veins were 200 feet wide by 1200 feet in length. In 1875, the Sumner Gold Mining Company was organized and consolidated the principal claims in the district. A sixteen stamp mill was erected, which was increased later to eighty stamps. This eighty stamp mill operated until 1883. The weight of the stamps was 850 lbs., crushing the ore to about 40 mesh, using straight amalgamation, and no attempt was made to save the concentrates. It is stated that the production of the mill during this period varied from twenty-five to seventy-five thousand dollars per month. At the time of maximum production, the operations were carried on through the Sumner shaft, located on the Big Blue-Sumner vein. This shaft was of six compartments, and equipped with steam driven hoist and cornish pumps. In 1882, a drain tunnel was started from the river level to cut this Sumner shaft at a depth of 260 feet. In 1883, the shaft house, hoist, pump equipment and shaft timbers were destroyed by fire, and the lower levels of the mine flooded. This company completed the drain tunnel over 2000 feet in length to the Big Blue Mine, which drained the upper workings.

After the fire of 1883, ore extraction was confined to stoping above the 240 foot level. The control of the company then passed to the Kern Development Company, who adopted a leasing system.

Up to the time of the organization of the Sumner Company, no definite records of production were kept at the mines. The Sumner Gold Mining Company showed records of production of 151,000 tons, which yielded $1,250,000 or $8.27 per ton. Records of later production mainly from leases show over 37,000 tons of ore extracted from which $13.43 per ton was saved. Total production of the Cove district is estimated as being from $5,000,000 to $8,000,000.

Estimated production of the various producing mines of the district is as follows:

Beauregard Mine $600,000; Urbana and Frank $200,000; Big Blue $2,000,000; Blue Gouge $75,000; Bull Run $450,000; Jeff Davis $150,000; Lady Belle $500,000; Nellie Dent $100,000; Sumner and North Extension $600,000.

R. W. Raymond, U. S. Mineral Statistics, in 1875, stated that "the vein on the Nellie Dent mine is 200 feet wide between walls, and carries ore yielding $10.00 to $12.00 per ton."

R. W. Raymond, in Seventh Annual Report of the U. S. Commissioner of Mining Statistics, states: "the Sumner produced in 1874, 5000 tons of ore with an average yield per ton of $40.00, total bullion product being $200.000—number of stamps, 16; cost of mining per ton, $2.50; cost of milling, $2.00; kind of power, water. The lode underground is 80 feet wide between walls, and has been opened up for 1000 feet along the vein for a depth of 160 feet. The average yield was $18.00 per ton."

From 1883 until 1901, the mines were operated under a series of leases. In 1921, the North Sumner Gold Mines Company acquired the Beauregard, Urbana, Frank, and North Extension Sumner Mines, and Lot No. 1, 33.48 acres of patented ground. The North Sumner Gold Mines Company started development operations on the Beauregard Mine in 1921, which has been in steady progress to date.

Geology and Vein Systems.

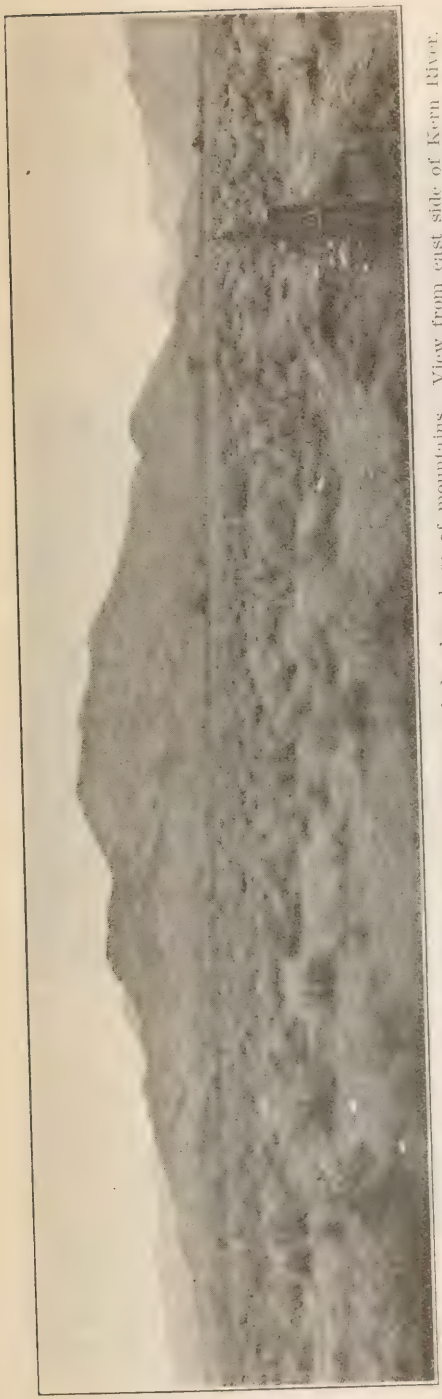
The formations consist of granite, slate and schist, the former predominating. Near Kernville, a narrow bed of slate and schist extends north and south, a distance of about 8 miles, and the Big Blue-Sumner lode occupies the contact. This belt of slates and schist is one to two miles in width and fifteen or more miles in length. The contact with the granite is irregular in outline and the Big Blue-Sumner vein occupies a fault which has broken through the various formations along the contact line. In places the slate and schist does not show for a considerable distance east of the Sumner vein, but notably on the Sumner North Extension, it should be in close contact. In the 2000 foot drain tunnel, we fail to find the slate, as the tunnel is in granite until it strikes the Big Blue vein, where it forms a part of the vein.

The Big Blue-Sumner vein occupies the line of the reverse fault. The vein is of great width, vein matter and quartz showing from 80 to 115 feet or more in width, and this lode is traceable several miles. The main lode has generally been regarded as composed of three veins, called the West Vein, which shows a width of five or six feet, the Middle, or Big Blue vein, which shows a width of about 40 feet, and the East or footwall vein, showing a width of about 5 feet. The filling between these veins is well silicified and somewhat mineralized, and in places the West and Big Blue veins merge.

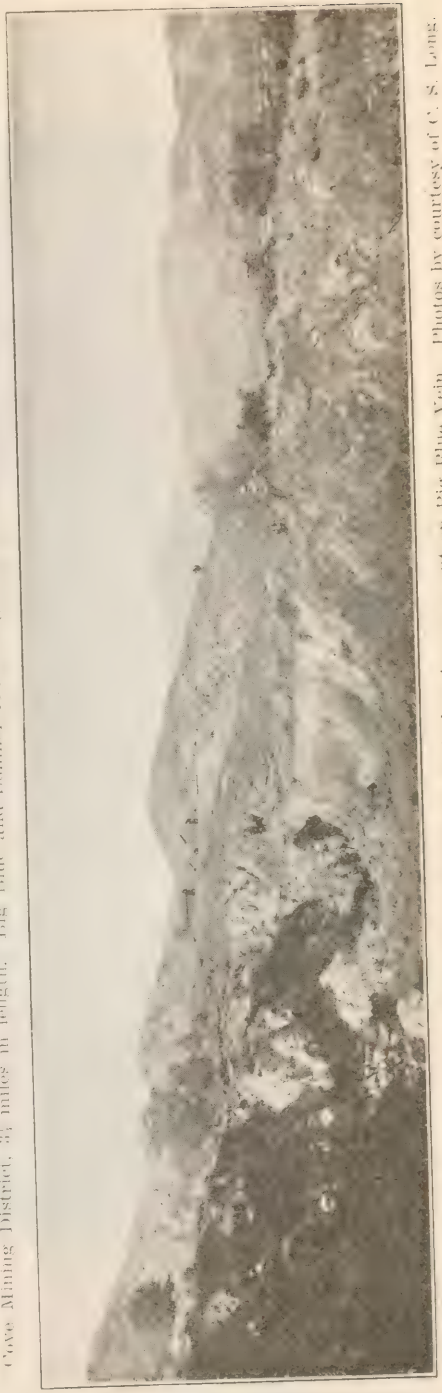
In addition to the main lode, there are a number of veins striking N. 75° E. to N. 40° E., which occur in the granite west of the lode and should form junctions with main lode, probably on the North Extension Sumner claim.

The Beauregard, Frank, Urbana, Jeff Davis and Lady Belle veins were heavy producers in the early days, the ore being of higher value than the main lode.

Beauregard Mine is located in Sec. 28, T. 25 S., R. 33 E., M. D. M., in the Sequoia Forest Reserve, and three-quarters of a mile north of Kernville. Elevation 2860 feet. The property consists of one claim, (1200 feet long and 200 feet wide), making a total area of 6 acres, patented in 1882, and is owned by the Kern Development Company.



Cove Mining District, 3¼ miles in length. Big Blue and Summer lode along base of mountains. View from east side of Kern River.



Property of North Sumner Gold Mines, Inc., looking north, and showing open cut on Big Blue Vein. Photos by courtesy of C. S. Long.

Property of the North Sumner Gold Mines, Inc. Photo by courtesy of C. S. Long.

The Beauregard and North Extension Sumner mines are under lease and bond and the Frank and Urbana mines are leased, by the North Sumner Gold mines. The adjoining claims, the Red Hill, Stirrup, Zadel, and Lot 1, consisting of 93 acres, have been deeded to the North Sumner Gold Mines, Inc.—a total area of 115.24 acres. P. V. Long is president; M. S. Baylor, secretary; R. L. Long, general manager. Office, 203 Merchants Exchange Building, San Francisco.

The present company started operations in August, 1921. There are five veins in the hanging wall granite, known as the Beauregard, Urbana, Frank, Lady Belle-Bull Run, and Jeff Davis, which probably form junction with the main fissure (Big Blue-Sumner lode) on the Sumner North Extension claim. The Beauregard vein strikes N. 75° E., dip 85 degrees N. W., average width 4 feet. Pay shoot worked is said to be 600 feet in length, with an average width of 3 feet. Ore is

Big Blue Vein, 240′ level—old stope, Big Blue and Sumner Mine. Photo by courtesy of C. S. Long.

free, and plates $35.00 per ton, concentrates are said to have an average of $150.00 per ton. This shoot of ore was worked to a depth of 200 feet. Workings consist of seven shafts from 100 to 300 feet deep, three levels, 2500 feet of drifts, and six stopes. The Urbana vein strikes N. 50° E., dips 75 degrees N. W., average width of 18 inches. Pay shoot is said to have been 600 feet long and 18 inches wide, free milling ore. Workings consist of five shafts from 50 to 180 feet deep, drifts and stopes. The Frank vein strikes N. 40° E., dip 77 degrees N. W., the vein forms a junction with the Urbana vein about 200 feet northeast of the Beauregard shaft, and also merges with the Beauregard vein on dip and strikes to the northeast.

The company has cleaned out and retimbered the Beauregard shaft, and is sinking this shaft to the 300 foot level. On the 200′ level, the vein was found stoped 300 feet northeast of the shaft. This level has

been extended 350 feet northeast on the vein, to a point where the main north and south fault cut the vein off, and this fault was drifted on 200 feet to the northeast. A crosscut was also driven east 200 feet into slate footwall, cutting through the Big Blue-Sumner vein. Water is secured from the Kern River through a ditch 3½ miles long.

Equipment consists of Ingersoll-Sargent compressor, capacity: 650 cu. ft., driven by water turbine. Single drum hoist, driven by air and air drills, two Cameron pumps, assay office, ore bins and cars. Ten stamp mill, 850 lb. stamps.

Fifteen men employed.

Bibl.: Report XIV of State Mineralogist, pp. 487 and 488.

Big Blue and Sumner, owned by *Kern Development Company*, C. S. Long, president and manager, Hayward, California; C. C. Hamilton, secretary. Office, 102 Exchange Building, Portland, Maine. Holdings consist of 30 acres, patented in 1872, and 1874, located in Sec. 28, T. 25 S., R. 33 E., M. D. M., about ½ mile north of Kernville. Elevation, 2850 ft. There are three parallel veins, known as East, West and Middle, which have an average width of 40 feet, strike N. 30° E., dip 70 degrees west. These veins form what is locally known as the Big Blue-Sumner lode. The pay shoot on west vein is said to have been 1400 feet in length, with an average width of 6 feet, and where this vein merged with the middle vein, it is stated that the lode was 80 feet in width between walls. The mine was developed to a depth of 400 feet. Workings caved and inaccessible. Idle.

Bibl.: VIII and XIV State Mineralogist Reports, VIII, p. 313; XIV, pp. 488–489, 511. Raymond, Seventh Report, U. S. Commissioner of Mining Statistics.

Blue Gouge Group of Mines, consists of 350 acres, located in Sec. 28 and 33, T. 25 S., R. 33 E., 2 miles north of Kernville. Elevation—3600 feet.

Owners: *Orejana Mining Company*, C. S. Long, president; C. C. Hamilton, secretary. Home office: Hayward, California.

Eight parallel veins occur on this group of claims in the granite, strike northeast and southwest, dip 68 degrees to northwest. Average width of these veins is from 4 to 5 feet. The Blue Gouge vein was developed by tunnel about 1000 feet in length, and shaft 200 feet in depth. Idle.

Bibl.: State Mineralogist Report XIV, p. 489.

Bull Run and Lady Belle Group consists of the following claims: Bull Run, Boston Belle, Jeff Davis and Lady Belle, located in Sec. 28, T. 25 S., R. 33 E., ½ mile north of Kernville. Elevation 2980 feet.

Owners: *Lady Belle Mining Company*, of Portland, Maine. C. S. Long, manager, Hayward, California.

The Lady Belle-Bull Run vein occurs in the granite, and has an average width of 3 feet. Strike N. 75° E., dip 62 degrees north. The vein is cut by a fault striking north and south about 200 feet west of Lady Belle shaft. This fault evidently cut off the Lady Belle ore shoot to the southwest. The vein has been developed on the Lady Belle claim by a shaft 380 feet deep sunk on the vein. Four levels driven

east and west on the vein, amounting to several thousand feet, and three stopes 200 feet long. The ore shoot developed is reported to have been 250 feet long with an average width of 3 feet. The last operations conducted from the Lady Belle shaft was in 1914, when ore extracted from the 300 foot level is reported to have plated $40 per ton. On the Bull Run claim, there is an incline shaft 360 feet deep, seven levels, several thousand feet of drifts and crosscuts, and one stope 900 feet long.

On the Jeff Davis claim, a vein of quartz twelve inches wide occurs in the granite, and is parallel to the Bull Run-Lady Belle vein. Strike N. 75° E., dip 70 to 75 degrees north. Workings consist of shaft 200 feet deep. It is reported that the ore shoot was 550 feet in length, and had an average width of 12 inches—stoped from 150 foot level to surface. Idle.

Bibl.: State Mineralogist Report, XIV, pp. 490, 498, and 501.

Commonwealth, owned by the *Kern Development Company*, C. S. Long, president; C. C. Hamilton, secretary. Offices: Portland, Maine. Consists of 32.4 acres, patented, in Sec. 15, T. 25 S., R. 33 E., about 2 miles north of Kernville. Prospect. Idle.

Bibl.: State Mineralogist Report, XIV, p. 491.

Nellie Dent and Content: consists of 54.3 acres, patented, in Sec. 28 and 33, T. 25 S., R. 33 E., about ½ mile west of Kernville.

Elevation: 3000 feet.

Owners: *Kern Development Company* of Portland, Maine. C. S. Long, president and manager, Hayward, California; C. C. Hamilton, secretary, Kernville.

The vein is reported to be from 40 to 100 feet in width, between granite walls. Strike N. 30° E., dip 68 degrees west. Massive outcrop of quartz occurs on both the Content and Nellie Dent claims, which is about 50 feet in width. Workings on Nellie Dent claim consist of shaft 150 feet deep, in which it is reported that the shoot of ore worked was 450 feet long. Workings caved. Idle.

Bibl.: State Mineralogist Report, XIV, p. 505. Raymond, U. S. Commissioner of Mineral Statistics, 1875.

Zenda Mine, consists of 180 acres located in Sec. 30, T. 30 S., R. 33 E., M. D. M., in the Amalie Mining district, 14 miles northeast of Caliente, in the Sequoia Forest Reserve, at an elevation of 3000 to 3500 feet.

Owner: *Zenda Gold Mining Company*. Frank Counen, president; Arthur D. Storke, general manager; B. D. Abbott, superintendent. Offices, 120 Broadway, New York City.

Since the last report on the mine, contained in the XIV Report of the State Mineralogist, the property was acquired by the above mentioned company, in 1922, and operated from October, 1922, to April, 1923, when the mine suspended operations, pending the remodelling of the 150 ton cyanide plant. The new mill has been under continuous operation from August 1, 1923. The vein occurs as a massive outcrop of quartz in quartz-porphyry, strike northeast and southwest, dip 35 degrees north. The width varies from 30 to 50 feet, and where exposed

in the glory hole, it has a width of 50 feet. The known pay shoot is 300 feet in length, with an average width of 30 feet. Workings consist of a number of tunnels from 150 to 600 feet in length, and two glory holes. The ore is mined from a glory hole on top of the ridge, at an elevation of 3550 feet. At an elevation of 3000 feet, the main haulage tunnel is driven N. 30° W., about 350 feet, from which point an upraise connects with glory hole. The ore is trammed in four 1½ ton cars from ore shoots to ore bins, at head of mill. The ore as mined from glory hole runs $3.00 per ton, of which the values are .07 to .08 ozs. in gold, and 3.5 ozs. in silver. Mine equipment consists of Ingersoll Rand Imperial type (13″ x 12″) (7½″ x 12″) compressor, driven by 60 h.p. motor, 60 h.p. electric hoist, air drills and blacksmith shop.

Mill: 150 ton ore bins, 10″ x 20″ Blake crusher, where ore is crushed to pass 1″ ring, then to Hardinge ball mill in closed circuit with Dorr Simplex classifier, and ground to pass through 80 mesh. The pulp is then treated by Dorr decantation method. Cyanide plant consists of 10′ x 40′ solution tank, 5 Parral agitation tanks and 6 cyanide vats and three zinc boxes. The recovery made is said to be 85% of silver, and 99% of gold, 0.8 of pound of cyanide consumed per ton of ore, and 8 lbs. of lime per ton of ore. Electric power is secured from the Southern California Edison Company, and water is pumped from Caliente Creek, a distance of ½ mile to plant.

Twenty-five men employed.

Los Angeles County.

COPPER AND GOLD.

Indicator Mine, formerly owned by the *Denver Mining and Milling Company* of San Fernando, has been recently acquired by J. W. Gates of Los Angeles. The property is located in Pacoima Canyon, 12 miles northeast of San Fernando. Elevation 2600 feet. The principal claims are known as: Denver, Chance, Fenner, Indicator and Red Ledge. There are a series of parallel quartz veins traversing a country rock of schist and gneiss, striking N. 80° E., dipping 60 to 80 degrees south. The veins vary in width from two to four feet. The ore is a complex sulphide, carrying massive pyrrhotite, chalcopyrite, galena, sphalerite, also stated to carry traces of nickel, cobalt and antimony, and said to carry values in gold and silver. These sulphides occur in lenticular masses in the different quartz veins.

Developments consist of a number of shallow shafts and tunnels on the different veins. Several men employed on development work.

Champion Group of Mines, consists of 15 claims, totaling 300 acres, in Sec. 28, T. 5 N., R. 14 E., in the San Fernando Mining District, about 4 miles northeast of Saugus, in the Santa Barbara Forest Reserve, at an elevation of 2000 feet.

Owners: S. B. Drum, 147 North Los Angeles Street, Los Angeles. Five veins; four parallel, have an average width of 4 feet, diorite footwall and porphyry hangingwall, strike east and west, dip 80 degrees south. There is one cross vein, having a width of 2 feet, which strikes north and south. The ore is oxidized gold quartz for a depth of 50 feet, where the sulphide zone is encountered.

Developments consist of a number of tunnels and prospect shafts on the different veins. The most extensive is on one of the east and west

veins; here a tunnel is driven 640 feet on the vein, and at 300 feet from portal cut ore shoot 80 feet long, average width of 3 feet, and ore is said to average $11.00 in gold, per ton.

Winze sunk on ore shoot to depth of 30 feet, and drift driven 128 feet east on vein. There is another tunnel driven on No. 3 vein, 290 feet. On this group of claims, there is also a large blow out of white quartz, free from iron, that should be of some value on account of high silica content.

Equipment consists of cars, track and blacksmith shop. Idle.

CLAY.

Tropico Potteries, Inc., plant located at Tropico, has been recently acquired by *Gladding, McBean and Company* of San Francisco. The plant was formerly operated by the Pacific Minerals and Chemical Company, with L. Lindsey, president, but in 1920 was incorporated by B. M. Wotgas as the Tropico Potteries, Inc. The principal products manufactured by the company are architectural terra cotta, vitrified clay, sewer pipe, ornamental tile. The company owns clay deposits in Riverside and San Bernardino counties. The new owners are planning to increase the capacity of the present plant.

IRON AND STEEL.

Pacific Coke and Coal Company has recently been incorporated, capitalized at $7,500,000, under the laws of Delaware, with $2,500,000 in preferred, and $50,000 shares of no par value common stock. The company is said to be a subsidiary of the Pacific Coast Steel Corporation, to take over the properties of the Pacific Coast Steel Company, with plants at San Francisco, Portland and Seattle. This corporation has acquired 230 acres of harbor land, lying between Long Beach and Los Angeles Harbor, and plans to erect the first unit of a blast furnace, capable of producing 600 tons of pig iron per day.

The company, besides owning coal and iron deposits in Utah, has also acquired the *Vulcan Iron Deposits*, located in the Providence Mountains, 4 miles east of Kelso, a station on the Salt Lake Railroad. The holdings, consisting of 260 acres, are in the southeast corner of T. 10 N., R. 13 E., San Bernardino County. The ore is a semi-hard red hematite, and is a replacement of limestone near its contact with monzonite. Average analysis of the iron ore is as follows: Iron, 64.82%; Phosphorus, 0.044%; silica, 3.04%; manganese, 6.278%; alumina, 0.568%; lime, 0.444%; sulphur, 0.059%; volatile, 1.85%. They have also acquired a large deposit of limestone near Victorville, San Bernardino County.

The officers of the Pacific Coke and Coal Company are: E. M. Wilson, president; T. F. C. Gregory, vice president; Wallace Sheehan, secretary.

Orange County.

Blue Light Mine. This property, which was formerly known as the Silverado Mine, is located on the west slope of the Santa Ana Mountains, in Silverado Canyon, 20 miles east of Orange, Secs. 11, 14, T. 5 S., R. 7 W. Elevation 2650 to 2950 feet. The property was discovered in 1894. Operated by the Western Zinc Mining Company from 1906 to 1908, who installed a mill and produced six cars of lead and zinc

concentrates. The property was idle until 1913 when acquired by W. H. Thorpe of Los Angeles, who installed 50 ton flotation plant, and operated the property until 1919. In 1919, the property was purchased by the *Blue Light Silver Mines Company*, Mr. Egabroad, president; C. S. Chapman, vice president and managing director; S. L. Collins, secretary; O. H. Pember, superintendent. Offices, F. & M. Building, Fullerton. The company have been developing the property to date. Claims: Dunlap-Blue Light, Harvey-Blue Light, Flannagan-Blue Light, Iron Clad No. 1, No. 2, No. 3, No. 4, Blue Light Extension No. 1, No. 2, No. 3, No. 4, and No. 5. Total holdings amount to 269 acres, of which 60 acres is patented.

The mineral belt in vicinity of Silverado Canyon is two miles wide, and extends nearly north and south for a distance of 8 miles. The country is formed to a great extent of dikes of greenish to blackish rocks, often showing distinct hornblende crystals. The mines south of the canyon are in a feldspathic rock, which is probably an intrusive porphyry. The crystalline rocks of this region are of the Cretaceous age. Two parallel lodes, known as Blue-Light lode and Dike vein, occur in the metamorphic rocks. The former having proved the most productive, has been extensively developed along its outcrop for a considerable distance. The veins have widths of 2 to 6 feet. The ore is silver bearing galena, associated with zinc-blende and pyrite. Irregular lenses of complex lead-zinc sulphide ore occur in these two lodes. Seven known ore bodies have been developed on the Blue Light lode, in the north and south workings from No. 3 tunnel on the Blue Light Mine.

The Blue Light vein strikes N. 16° E., dip 30 degrees to east, and has been proven on the surface for a distance of 4500 feet. Average width of vein being 4 feet. The vein has been developed by seven tunnels. At elevation of 3000 feet, No. 2 tunnel is driven on the vein 350 feet. No. 3 tunnel, which is 50 feet below No. 2 tunnel, is a crosscut tunnel for 200 feet to vein, then driven 470 feet south on vein, this tunnel is connected by upraises and stopes with No. 2 workings. No. 4 tunnel, which is located south of these workings, is a crosscut tunnel driven 900 feet east, cutting the vein at 540 feet from portal; no ore was found at this point and the vein was not drifted on either to the north or south.

The most recent development has been in driving No. 7 tunnel, which is located north of No. 3 workings and at a vertical elevation of about 400 feet below No. 3 workings, in Pine Canyon. The tunnel is driven 50 feet southwest, then crosscut 110 feet east to vein, with drift south 500 feet on the vein, with the expectation of developing the known ore shoots worked in upper workings. It is reported that 8000 tons of ore have been developed above No. 3 tunnel level that has an average value of .06 ozs. gold, 25 ozs. silver, 4% lead and 13% zinc.

Equipment: 14″ x 8″ x 8″ Clayton compressor, driven by semi-Diesel Y-type gas engine, air drills, blacksmith shop, cars and track.

Mill: 50-ton flotation plant, two 9″ x 15″ Blake jaw crushers, driven by 30 h.p. West Coast gas engine, Challenge ore feeder, 5′ x 4′ ball mill in closed circuit with Dorr classifier, one 12′ K. & K. flotation machine, two 6′ K. & K. flotation machines, one Wilfley, one Overstrom and one

Cottrell table, two Dorr thickeners and one Denver filter, flotation plant driven by 100 h.p. Fairbanks-Morse semi-Diesel gas engine.

Product: produced in 50-ton flotation plant:

5 cars shipped in 1917 by W. H. Thorpe.

Lead concentrates:

Au. = 0.25 ozs.; Ag. = 303.8 ozs.; Pb. = 15%; Zn. = 14.4%; Fe. = 19.8%.

Zinc concentrates:

Au. = .08 ozs.; Ag. = 21 oz.; Pb. = 2.28%; Zn. = 45%; Fe. = 8.6%.

Iron concentrate:

Au. = .02 ozs.; Ag. = 4.3 ozs.; Zn. = 0.5%; Fe. = 43.5%; S. = 40%.

During 1922, shipped to Selby smelters: 52,280 lbs. of lead concentrates, assaying: Au. = 0.29 ozs.; Ag. = 207.20 ozs.; Pb. = 19.9%; Zn. = 31%; S. = 26.1%; Fe. = 6.2%.

29,120 lbs. of lead concentrates, assaying: Au. = 0.22 ozs.; Ag. = 104 ozs.; Pb. = 14.7%; Zn. = 21.7%; Fe. = 6.2%; S. = 21%.

Also produced a zinc product, assaying: Zn. = 45%, and carrying 30 ozs. silver, which was stored at plant, and a clean iron product, assaying: Au. = 0.02 ozs.; Ag. = 4.3 ozs.; Zn. = 0.5%; Fe. = 42%; S. = 40%, which was also stored at plant.

The company plans to increase the capacity of its present experimental flotation plant, as soon as the present plan of development work on No. 7 tunnel level is completed. Ten men are employed.

Riverside County.

CRUSHED ROCK.

Temescal Rock Quarry. The quarry was formerly owned by the *Temescal Rock Company*, now operated by the *Blue Diamond Materials Company*, 2200 E. 16th Street, Los Angeles.

The company's holdings cover 1100 acres of mountain land lying in T. 4 S., R. 6 W., S. B. M. The quarry is located in Temescal Canyon, 4 miles southeast of Corona. The material that is being crushed is a rhyolitic porphyry and is very hard and sharp. The mountain side where the rock is quarried slopes steeply, and has an elevation of 1000 to 1200 feet above the canyon. The bench now being quarried is approximately 350 feet high and 1200 feet long. The present production of the rock crushing plant is 5000 tons per day.

John Schreiner, manager; George Haines, superintendent.

Description of the crushing plant is contained in XVth Report of the State Mineralogist, pp. 586–587, and a more recent description is found in the Engineering and Mining Journal Press, November 24, 1923.

GOLD.

White Mines Corporation, John M. White, president. Offices: 440 Wilcox Building, Los Angeles, is developing a group of claims, located 35 miles north of Indio. The company owns six claims, on which it has a shaft 150 feet deep, and a tunnel driven on the vein 300 feet. The vein has an average width of 3 feet and is said to have an average value of $12.00 per ton in gold. Three men employed.

TIN.

Temescal Tin Mine, located four miles southeast of Corona, on the old Spanish grant, known as the El Sobrante de San Jacinto, has recently been taken over under lease and bond by J. O. Stewart and associates of Los Angeles. The property was operated in 1887 by the *San Jacinto Tin Company*, an English corporation. The developments consisted of two incline shafts, 272 feet apart, located on Cajalco Hill, which were sunk on a vein which strikes N. 45° E., dip 65 degrees northwest, and is said to have had an average width of 6 feet. A tunnel was driven on this vein which intersected one of these shafts at a depth of 45 feet, and the other shaft at a depth of 100 feet. A number of parallel veins occur in hornblende-biotite granite, having a general course of northeast and southwest. The belt in which these veins occur, carrying values in tin, is about 4 miles in length, and about 2 miles in width, the deposits being confined to the granitic rocks in this area. Two varieties of tin ore occur in the district. The yellow, occurring in thin layers in an uncrystalline form, and the brown oxide of tin.

The deposit is fully described in the XIth Report of the State Mineralogist, by H. W. Fairbanks, and also in the XVth Report, pp. 547–550, by F. J. H. Merrill.

MOLDING SAND.

Jurupa Molding Sand Deposit is situated in Sec. 29, T. 2 S., R. 5 W., on the Evans Ranch, about one quarter of a mile northwest of Jurupa Station on the Salt Lake Railroad, and on the south bank of the Santa Ana River, within the city limits of Riverside. The deposit is being developed by H. E. Blood, of 917 Citizens National Bank Building, Los Angeles, who has a lease on 20 acres.

The deposit is a fine-grained, sandy loam, and is from 6 to 20 feet thick, covering an area of 20 acres. It is stated that 90% of the sand will pass through 100 mesh screen.

Equipment consists of 18″ belt conveyor, 20 feet long, and ¼ mesh shaking screen. About ten cars of screened sand is being shipped to Los Angeles. Two men are employed.

San Bernardino County.

CLAY.

Pacific Clay Deposit is located in Hart Mining District, which is situated in the extreme northeast corner of San Bernardino County, near the Nevada-California line. The deposit is being developed by the *Pacific Sanitary Manufacturing Company* of San Francisco.

GOLD.

Belmont Mine is located in the Goldstone Mining district, 34 miles N. E. of Barstow. Elevation, 3700 feet.

Owners: *Belmont Mining Company*, Dr. W. W. Ramsey, president; George I. Drumm, secretary; Morgan Berggreen, superintendent.

Holdings consist of 21 claims, totaling 240 acres. The present development work is confined to the Belmont group, consisting of five claims.

Two parallel quartz veins occur in shales and schist, strike N. 60° W., dip 35 degrees to northeast. These veins vary in width from 12 inches to 3 feet. The ore is free milling with some pyrite and chalcopyrite.

Developments consist of a number of shafts sunk to depths of 50 to 300 feet on the different veins. The main shaft is 300 feet deep, sunk on incline of 35 degrees. Drifts have been driven on the vein for a short distance on the 100′, 200′ and 300′ levels. Present work confined to drifting on the vein on the 300 foot level; here the vein is 3 feet wide, and is said to average $20.00 per ton. Some high grade ore was shipped from the property during 1916 and 1917.

Equipment consists of 15-h.p. Fairbanks-Morse gas engine hoist (7½″ x 6″), Chicago pneumatic compressor, air drills, blacksmith shop and cars. The property adjoins the Goldstone Mining Company property, on the southeast. Three men employed.

Goldstone Mine is situated in the Goldstone Mining District, 33 miles northeast of Barstow. Elevation, 3600′.

Owners: *Goldstone Mining and Milling Company*, J. M. Schofield, president; G. Marston Leonard, secretary, Boston, Mass.

Holdings of the company consist of 22 claims, divided into five groups known as Goldstone, Golden State, Gold Dollar, Big Drum and Lucky Find. A vein of quartz occurs on the contact of crystalline limestone and shale. The vein has a course of north and south to northwest and southeast. Dip 40 degrees west. Average width of 4 feet. Ore shoot developed was 150 feet in length and 4 feet wide. Since XVth Report of the State Mineralogist, the company sunk a 2-compartment vertical shaft to depth of 300 feet, at 50 feet below the collar, cut the vein, and for the remaining distance the shaft is in the limestone footwall. No crosscuts were run to intersect the vein from this shaft. A number of incline shafts were sunk along the outcrop to depths of 40 feet, south of the main shaft. An open cut 150 feet in length was also made on the vein. Most of the ore mined came from this open cut. 100 tons of ore milled is said to have averaged $40.00 per ton. One car of ore shipped by the company to Selby Smelter averaged $70.00 per ton.

The property was operated from 1916 to 1918, when operations were suspended.

Equipment consists of 25-h.p. single drum gas engine hoist, 12″ x 12″ Fairbanks-Morse compressor, driven by 50-h.p. gas engine, headframe, blacksmith shop, assay office and buildings. Two men employed.

Bibl.: State Mineralogist Report XV, pp. 805–806.

Massen Group of Mines, consists of 87 claims, located on the northwest slope of the Alvord Range of mountains, in Sec. 26–35, T. 12 N., R. 3 E., 32 miles northeast of Barstow.

Elevation, 2400 to 3100 feet.

Owner: J. H. Massen and associates of Barstow.

A number of roughly parallel narrow quartz veins occur in the granite. These veins have a general course of northwest and southeast, with dips varying from 40 to 60 degrees to southwest. The veins vary in width from 2 inches to 2 feet. These narrow veins of quartz usually occur along fault fractures in the granite, and as a rule the fracture is filled with a diorite-porphyry, with quartz occurring either

on the hanging or footwall of the fissure. The ore is oxidized quartz, showing free gold.

Developments consist of a number of shallow shafts and tunnels on the different veins. It is stated that ore shipped from the Gem State Group averaged $50.00 per ton. Two men employed.

Olympus Mine, situated on the south slope of the Paradise Range of mountains, at elevation of 2400 feet, 22 miles north of Daggett.

Owner: *Olympus Gold Mining Company*, S. E. Bagley, president; M. W. H. Williams, secretary; H. Galerone, superintendent. Offices: 508 Alvarado Street, Redlands, California.

Since the data in XVIIth Report of the State Mineralogist was published, the company has been driving a crosscut tunnel to cut the vein at 200 feet below the collar of the incline shaft. At an elevation of 2200 feet, the tunnel has been driven 75 feet northwest, then 325 feet west to vein, with a drift north on the vein 100 feet. In this north drift, the vein has a width of 4 feet. The vein filling being quartz and porphyry, which pans well in free gold. The company proposes to continue drifting on the vein until shoot of ore encountered in upper workings is developed. Four men are employed.

SILVER.

Rand District.

California Rand Silver, Inc. The company's report of operations for the year ending September 1, 1923, states that the outstanding feature of the mining enterprise today is the practical demonstration that the property can be operated with the market price of silver from 60 to 65 cents per oz. The company has been able to pay its regular monthly dividends of two cents a share, requiring a distribution of $25,600, and has at the same time increased its surplus by $135,000.

The original mill, with a capacity of 150 tons, was enlarged during the year to 400 tons capacity. For the year, there were 16,161 feet of underground development. Up to September 1, 1923, a total of 44,455 feet, or 8 miles of underground development work has been done since the opening of the mine. Aside from development work on other shafts, shaft No. 1 and No. 2 produced 134,000 tons of rock during the year, segregated as follows:

Shipping ore	8,830 tons
Milling ore	80,790 tons
Waste	44,380 tons
Total	134,000 tons

Total Production.

Recapitulation of all production to August 1, 1923:

	Gold, ozs.	*Silver, ozs.*
From Ore—		
Prior to September 1, 1922	10,084.253	4,232,241.73
September 1, 1922–August 1, 1923	1,625.658	923,563.35
From Concentrates—		
Prior to September 1, 1922	1,176.853	363,695.44
September 1, 1922–August 1, 1923	5,147.982	1,471,451.97
Grady Lease	5,429.989	1,487,742.11
Totals	23,464.735	8,478,694.60

	Gold	Silver
Values from Ore—		
Prior to September 1, 1922	$4,602,650.17	$3,312,908.33
September 1, 1922–August 1, 1923	927,652.88	689,357.14
Values from Concentrates—		
Prior to September, 1922	388,020.99	323,086.75
September 1, 1922–August 1, 1923	1,412,126.87	1,192,587.70
Grady Lease	1,599,979.98	1,099,119.70
Totals	$8,930,430.89	$6,617,059.62

The mill has treated 90,363 tons of ore in 332 days, which is an average of 272.17 per day. There were 27½ days lost time, of which 50 per cent was due to delays, such as water shortage, ore shortage, or power interruptions. The running time efficiency was 91.72 per cent. The running time tonnage averages 296.75 tons per day.

The average gold heads were $1.93; average gold tails were $0.528; average gold extraction was 72.64 per cent. The average silver heads were $15.00; average silver extraction was 90 per cent. The total average heads was $16.93; total average tails were $2.02; total average extraction was 88.50 per cent. The recovery per ton was $14.91; total recovery on 90,363 tons, $1,347,312.33; average concentrate value was $307.29; tons of concentrates shipped 4,595.414; gross value of concentrates shipped $1,412,126.87; net value of concentrates shipped, $1,192,587.70. Cost of marketing 4,595.414 tons of concentrates was $219,539.17, or $47.77 per ton.

After payment of the dividends of September 4, 1922, the company had on hand a balance of $319,200.

Revenue from the smelter for ore and concentrates for the year was $1,881,944.84, to which is added bullion sold, interest earned, and sundry receipts, totaling $17,624.87, making a total revenue of $1,899,569.71.

Principal items of disbursement were:

Labor	$517,909.99
Materials, supplies, power development, litigation, insurance and incidentals	484,128.54
Taxes	147,268.60
	$1,149,307.04

The company paid in dividends to stockholders, including the September, 1923, dividend, $819,200 and had on hand September 4, 1923, a balance of $589,841.28, an increase of $270,641 over the balance at this time last year.

In the four years and two months of operation of the mine, there have been distributed in dividends as follows:

An initial dividend of 7½ cents per share, forty-four regular dividends at two cents per share, and eleven extra dividends at 10 cents per share, making a total of $2.05½ per share or $2,630,400.

San Diego County.

GEMS.

Himalaya Gem Mine, located in Sec. 17, T. 11 S., R. 2 E., near Mesa Grande, is being operated by Fred Rynerson of San Diego. The property was formerly operated by the *Himalaya Mining Company* of

New York. A pegmatite dike having a general north-westernly direction, occurs in a dark green gabbro. The average width of dike is about 4 feet. The tourmaline and other gem material occur imbedded in clay, in cavities and pockets in the coarse pegmatite dike. A new tunnel is being driven to cut the vein at a greater depth that was attained in the old workings and the present operator expects to open up important deposits of gem tourmaline with this deeper development.

A. B. C. Gem Mine, located in Sec. 8, T. 13 S., R. 2 E., near Ramona, is being developed by C. A. Seay, and L. B. Spalding of Ramona. It is reported that some new pink beryl deposits have been encountered. The gem material occurs in pegmatite dikes in granite. The mine has been worked at intervals since 1907, and is reported to have produced a large amount of pink beryl. The largest production came from what is known as the old Daggett stope, a narrow, irregular working, which followed the vein on its dip for something over 100 feet. Recently, a new shoot of gem-bearing clay has been found north of the Daggett stope.

GOLD.

North Star Mines, located in Sec. 31, T. 14 S., R. 5 E., in Deer Park Mining district, 7 miles northeast of Descanso, was recently purchased by Francis Gage and associates of Los Angeles, from J. H. Schook of Descanso. It is reported that the new owners will start active development work on the property, and also plan to install a 5-stamp mill. The ore is stated to have an average value of $25.00 per ton.

NICKEL.

Friday Copper Mine, consists of the following claims: Sterne, Copper Queen, Uncle Sam, Cobalt King, and Nickel King, located in Sec. 15, T. 13 S., R. 4 E., 4 miles south of Julian.

Elevation: 4400 feet.

Owner: *Friday Copper Mining Company*, Frank H. Brown, president; Becher Stern, secretary. Offices, American National Bank Building, San Diego.

The property has recently been taken over under lease and bond by Allen R. Partridge of Los Angeles.

On the surface, the outcrop of the vein is an iron gossan, consisting chiefly of limonite, striking east and west, with a width of 25 to 50 feet. The ore occurs near the contact of gabbro and schist and in places is enclosed in gabbro. The ore consists mainly of pyrrhotite, but contains pyrite, and an iron nickel sulphide, and is accompanied by small quantities of amphibole and calcite. Analysis of ore shows 4% nickel, 2% cobalt, and 6% arsenic.

Developments consist of shaft 175 feet deep, with two levels, one at a depth of 130 feet, the other at a depth of 175 feet. The ore body developed is 60 feet long by 20 feet in width.

The mine is being unwatered, and an extensive plan of development has been planned. Joseph Hartley, superintendent.

Bibl.: State Mineralogist Reports XIV, pp. 666–667; XVII, pp. 380–381. U. S. Geol. Survey Bull. 640 D.

OIL FIELD DEVELOPMENT OPERATIONS.

By R. D. Bush, State Oil and Gas Supervisor.

FEATURES OF 1923 PRODUCTION.

California again broke all previous records in its production of petroleum by producing 263,729,000 barrels in 1923. This is about 36 per cent of the amount produced in the entire United States, and almost double the amount produced by California in 1922, which was a record year. This great increase was due to the intensive and rapid development of the Huntington Beach, Santa Fe Springs and Long Beach fields, where initial productions of nearly all the wells were large. These three fields produced 69.4 per cent of the State's production in 1923. This tremendous production taxed the storage capacity and marketing facilities of the large companies, and caused new markets for California crude oil to be opened. About 92,000,000 barrels of crude was in storage at the end of 1923, as compared with 61,380,000 barrels at the beginning of the year, and notwithstanding about 54,455,000 barrels was shipped through the Panama Canal to eastern refineries.

During September, 1923, production reached its maximum, and then declined, this decline continuing to the end of the year, in spite of the fact that production was resumed in some of the San Joaquin Valley fields where it had been shut in. In December, 1923, for the first time since December, 1920, storage decreased, or, in other words, consumption, which includes oil shipped to eastern ports through the Panama Canal, was greater than the December production, which averaged daily 706,000 barrels. The indicated consumption of oil increased during the year from 451,613 barrels in December, 1922, to 711,459 barrels in December, 1923.

There were three reductions in the price of oil in 1923: the first reduction was made on January 6, when all grades, including 20 degrees Baumé, and above, were reduced, the highest gravity (35 degrees and above) being reduced 53 cents. The next reduction, on April 10, for the refinable oils, amounted to 41 cents for the highest grade. The third reduction, amounting to 18 cents on the highest grade, was made on October 9. Fuel oil, or the grades below 20 degrees Baumé, remained stationary during the year.

A total of 1400 new wells was started in 1923, as compared with 1439 in 1922. During the year, 980 producing wells were completed.

At the close of the year with the Santa Fe Springs, Huntington Beach and Long Beach fields almost completely developed, activity in the Los Angeles Basin centered in Torrance field, but this field does not give promise of being as prolific, or of developing as rapidly, as the above mentioned fields, since most of the acreage is held in comparatively large leases by the larger companies. Activity is also gradually increasing in the older fields of the San Joaquin Valley, and the outlook for the petroleum industry for the year 1924 looks bright at the present time. The year started out with an increase in the price of all grades of oil amounting to 25 cents, effective January 22, and the prospect of additional increases during the year is good.

From September 8, 1923, to and including December 29, 1923, the following new wells were reported as ready to drill:

Company	Sec.	Twp.	Range	Well No.	Field
COLUSA COUNTY:					
S. H. Keoughan, Trustee	31	18	4	1	----------
CONTRY COSTA COUNTY:					
Elsinore Oil Co. of Nevada	19	2	1	1	----------
FRESNO COUNTY:					
General Petroleum Corp.	22	21	15	1	----------
KERN COUNTY:					
Elk Hills Central Oil Co.	14	31	24	2	Elk Hills
Elk Hills Development Co.	14	30	22	1	Elk Hills
Pacific Oil Co.	27	30	24	57	Elk Hills
Pacific Oil Co.	35	30	24	80	Elk Hills
Pacific Oil Co.	35	30	24	227	Elk Hills
Pacific Oil Co.	35	30	24	73	Elk Hills
Pan American Petroleum Co.	6	31	24	1	Elk Hills
Pan American Petroleum Co.	3	21	24	Crampton 6-K	Elk Hills
Pan American Petroleum Co.	2	31	24	Crampton 13-F	Elk Hills
Pan American Petroleum Co.	2	31	24	Crampton 12-F	Elk Hills
Pan American Petroleum Co.	1	31	24	Crampton 8-E	Elk Hills
Gray Heirs	3	29	28	42	Kern River
Gray Heirs	3	29	28	43	Kern River
Kern River Oilfields of Cal. Ltd.	35	28	28	1-BB	Kern River
Cymric Oil Co.	26	29	21	3	McKittrick
Bell Evans Oil Co. Inc.	35	32	23	1	Midway
Bell Evans Oil Co. Inc.	35	32	23	2	Midway
Bell Evans Oil Co. Inc.	35	32	23	3	Midway
Berry & Ewing	31	32	24	17	Midway
Berry & Ewing	31	32	24	18	Midway
Big Ten Oil Co.	36	32	23	4	Midway
C. C. M. O. Co.	27	31	22	2	Midway
C. C. M. O. Co.	22	31	22	28	Midway
C. C. M. O. Co.	26	31	22	5	Midway
C. C. M. O. Co.	25	31	22	19	Midway
C. C. M. O. Co.	22	31	22	33	Midway
C. C. M. O. Co.	25	31	22	15	Midway
Formax Oil Co.	9	32	23	40	Midway
Formax Oil Co.	36	32	23	9	Midway
Formax Oil Co.	36	32	23	10	Midway
General Petroleum Corp.	36	32	23	11	Midway
Honolulu Consolidated Oil Co.	32	31	24	7	Midway
Honolulu Consolidated Oil Co.	6	32	24	68	Midway
Honolulu Consolidated Oil Co.	6	32	24	58	Midway
Kendon Petroleum Co.	8	32	24	13	Midway
Lawrence Santa Fe Oil Co. Inc.	35	32	23	2	Midway
Mascot Oil Co.	13	32	23	7	Midway
North American Oil Cons.	36	32	23	3	Midway
Olympia Oil Co.	30	31	24	5	Midway
Pacific Oil Co.	36	32	23	1	Midway
Pacific Oil Co.	25	31	23	69	Midway
Pacific Oil Co.	25	31	23	1	Midway
Pacific Oil Co.	3	32	24	1	Midway
Pacific Oil Co.	31	31	24	25	Midway
Section Two Oil Co.	15	32	24	52	Midway
Seven States Oil Co.	2	31	22	3	Midway
Stabler Oil Co.	22	32	23	1	Midway
Vivian B. Oil Co.	28	31	24	1	Midway
C. J. Berry	35	32	23	5	Midway
Havenstrite & Baker	34	12	24	Hillside 26	Sunset
E. G. Lewis	17	11	23	1	Sunset
E. G. Lewis	10	11	23	Hauchen 1	Sunset
E. G. Lewis	10	11	23	Boss 1	Sunset
Transport Oil Co.	6	11	23	8	Sunset
United Oil Co.	4	11	23	2	Sunset
General Petroleum Corp.	10	11	23	1	Sunset
Midland Oilfields Co. Ltd.	28	11	20	2	Wheeler Ridge
Standard Oil Co.	22	11	20	1	Wheeler Ridge
Standard Oil Co.	28	11	20	Kern Co. Lease 2 7	Wheeler Ridge
Standard Oil Co.	28	11	20	Kern Co. Lease 2 6	Wheeler Ridge
Standard Oil Co.	28	11	20	Kern Co. Lease 2 8	Wheeler Ridge
Pearson & Phillips	28	11	20	Kern Co. Lease 2 9	Wheeler Ridge
T. A. Piper	35	26	18	1	----------
KINGS COUNTY:	2	27	28	Piper 2	----------
California Oil Co.	2	23	19	1	----------
California Oil Co.	7	23	20	1	----------

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES COUNTY:					
Acme Petroleum Corp.	19	4	12	Damron 4	Long Beach
Bartholomae Oil Corp.	24	4	13	4	Long Beach
Big Bear Oil Co.	24	4	13	1	Long Beach
Bonded Oil Syn.	24	4	13	1	Long Beach
California Co-Operative Oil Syn.	24	4	13	2	Long Beach
California Oil Producers, Inc.	24	4	13	1	Long Beach
Cook & Harpster, Inc.	24	4	13	1	Long Beach
Davis & Macmillan Co.	29	4	12	7	Long Beach
Walter H. Fisher	30	4	12	7	Long Beach
Fred B. Foster & Co.	19	4	12	70	Long Beach
George F. Getty	20	4	12	L. B. 5-A	Long Beach
George F. Getty	19	4	12	L. B. 10	Long Beach
Henderson Petroleum Syn.	19	4	12	Hoover 2	Long Beach
Hope Oil Co.	30	4	12	May Richards 1-A	Long Beach
R. E. Ibbetson Drilling Co.	19	4	12	2	Long Beach
Industrial Oil Syn.	19	4	12	23	Long Beach
A. T. Jergins Trust	19	4	12	9	Long Beach
Laddie Boy Nos. 1 & 2	24	4	13	2	Long Beach
Lang-Wall, Inc.	24	4	13	3	Long Beach
Carl Maier	19	4	12	2	Long Beach
Marine Oil Corp.	19	4	12	12	Long Beach
Meserve-Knight-Fyfe, Trustees	24	4	13	1	Long Beach
Meserve-Knight-Son	19	4	12	1	Long Beach
Meserve-Knight-Son	24	4	13	2	Long Beach
Mission Bell Oil Co.	19	4	12	1-A	Long Beach
Mission Bell Oil Co.	19	4	12	2	Long Beach
Monrovia Oil Co.	29	4	12	2	Long Beach
Nevada Signal Hill Oil Co.	24	4	13	1	Long Beach
Pan American Petroleum Co.	30	4	12	Chainey 1	Long Beach
Pan American Petroleum Co.	29	4	12	McKeon 1	Long Beach
Pan American Petroleum Co.	29	4	12	McKeon 2	Long Beach
E. A. Parkford	19	4	12	Richardson 1	Long Beach
E. A. Parkford	19	4	12	Richardson 2	Long Beach
Petroleum Midway Co. Ltd.	19	4	12	Davidson 3	Long Beach
Petroleum Midway Co. Ltd.	19	4	12	Davidson 4	Long Beach
Petroleum Midway Co. Ltd.	19	4	12	Foster One 3	Long Beach
Petroleum Midway Co. Ltd.	19	4	12	Bauman 2	Long Beach
Petroleum Midway Co. Ltd.	29	4	12	Rosenfield 2	Long Beach
Petroleum Midway Co. Ltd.	19	4	12	Walker 2	Long Beach
Petroleum Midway Co. Ltd.	19	4	12	O'Neill 2	Long Beach
Pomona Oil Co.	24	4	13	Pomona 2	Long Beach
W. R. Ramsey	29	4	12	2A-B	Long Beach
V. E. Sack & Co.	24	4	13	1	Long Beach
San Martinez Oil Co.	29	4	12	Fry 2	Long Beach
Shell Co.	28	4	12	Alamitos 10-A	Long Beach
Shell Co.	29	4	12	Wells 2	Long Beach
Shell Co.	29	4	12	Nicholson 4	Long Beach
Shell Co.	29	4	12	Kent-Garth 3	Long Beach
Shell Co.	29	4	12	Babb & Tucker 1-A	Long Beach
Shreve Oil Syn.	13	4	13	1	Long Beach
Special Delivery Oil Syn.	24	4	13	4	Long Beach
St. Louis Oil Co.	24	4	13	1	Long Beach
The United Oil Co.	29	4	12	Denni 1-A	Long Beach
The United Oil Co.	30	4	12	Hass 10	Long Beach
The United Oil Co.	30	4	12	Hass 5	Long Beach
United States Royalties Co.	24	4	13	14	Long Beach
United States Royalties Co.	19	4	12	8	Long Beach
Wigle & McBride, Inc.	29	4	12	1-A	Long Beach
Rapetto Hills Petroleum Corp.	34	1	12	1	Montebello
Amazon Drilling Corp.	6	3	11	S. P. 1	Santa Fe Springs
Associated Oil Co.	1	3	12	Clarke 4	Santa Fe Springs
Associated Oil Co.	33	2	12	Clarke 9	Santa Fe Springs
Associated Oil Co.	1	3	12	Clarke 10	Santa Fe Springs
Associated Oil Co.	1	3	12	Clarke 7	Santa Fe Springs
Bandini Petroleum Co.	6	3	11	Off 3	Santa Fe Springs
Equitable Oil Syn. No. 1	17	3	11	1-A	Santa Fe Springs
General Petroleum Corp.	6	3	11	Jalk 10	Santa Fe Springs
General Petroleum Corp.	5	3	11	Santa Fe 18	Santa Fe Springs
General Petroleum Corp.	5	3	11	Santa Fe 37-A	Santa Fe Springs
General Petroleum Corp.	5	3	11	Santa Fe 19	Santa Fe Springs
General Petroleum Corp.	5	3	11	Santa Fe 17	Santa Fe Springs
Mohawk Oil Co.	6	3	11	Batson 4	Santa Fe Springs
Petroleum Midway Co. Ltd.	31	2	11	Matern One 3	Santa Fe Springs
Petroleum Midway Co. Ltd.	6	3	11	Patterson 9	Santa Fe Springs
Petroleum Midway Co. Ltd.	6	3	11	Standlee 3	Santa Fe Springs
Petroleum Midway Co. Ltd.	31	2	11	Matern One 4	Santa Fe Springs
Shell Co.	31	2	11	Thompson 4	Santa Fe Springs
Shell Co.	31	2	11	Thompson 5	Santa Fe Springs

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES COUNTY—Continued.					
Shell Co.	31	2	11	GHN 12	Santa Fe Springs
Shell Co.	6	3	11	Slusher 6-A	Santa Fe Springs
C. C. Stall Oil Assn.	35	2	12	C. C. Stall 1	Santa Fe Springs
Standard Oil Co.	6	3	11	Weisel 9	Santa Fe Springs
Standard Oil Co.	6	3	11	Weisel 11	Santa Fe Springs
Standard Oil Co.	6	3	11	Weisel 10	Santa Fe Springs
Standard Oil Co.	6	3	11	Weisel 12	Santa Fe Springs
Standard Oil Co.	1	3	12	Orr 1	Santa Fe Springs
Standard Oil Co.	36	2	12	A. O. Houghton 1	Santa Fe Springs
Standard Oil Co.	1	3	12	Orr 2	Santa Fe Springs
Standard Oil Co.	6	3	11	S. G. & J.	Santa Fe Springs
Standard Oil Co.	36	2	12	L. W. Houghton 1	Santa Fe Springs
Standard Oil Co.	36	2	12	W. L. Houghton 2	Santa Fe Springs
Standard Oil Co.	1	3	12	Orr 3	Santa Fe Springs
Standard Oil Co.	36	2	12	Jordan 5	Santa Fe Springs
Standard Oil Co.	5	3	11	S. Whittier Com. 16	Santa Fe Springs
Standard Oil Co.	31	2	11	Wolfskill 3	Santa Fe Springs
Standard Oil Co.	31	2	11	Santa Gertrudes 7	Santa Fe Springs
Standard Oil Co.	36	2	12	Santa Gertrudes 8	Santa Fe Springs
Standard Oil Co.	31	2	11	Santa Gertrudes 9	Santa Fe Springs
Standard Oil Co.	5	3	11	S. Whittier Com. 13	Santa Fe Springs
Standard Oil Co.	5	3	11	S. Whittier Com. 15	Santa Fe Springs
Union Oil Co.	31	2	11	Howard 7	Santa Fe Springs
Associated Oil Co.	14	4	14	Torrance 1	Torrance
Bankline Oil Co.	23	4	14	Bethune 1	Torrance
Beaver State Oil Co.	23	4	14	Torrance 1	Torrance
Beaver State Oil Co.	23	4	14	Torrance 2	Torrance
Belridge Oil Co.	14	4	14	Torrance Div. 1	Torrance
Geo. B. Bush	14	4	14	2	Torrance
Bush-Voorhis Oil Co.	14	4	14	1	Torrance
Bush-Voorhis Oil Co.	23	4	14	3	Torrance
Bush-Voorhis Oil Co.	23	4	14	2	Torrance
Bush-Voorhis Oil Co.	23	4	14	4	Torrance
C. H. and D. C. Trust	23	4	14	Victoria 1	Torrance
California Drilling Co.	23	4	14	Black Diamond 1	Torrance
T. J. Cannon Drilling & Supply Co.	23	4	14	1	Torrance
C. C. M. O. Co.	14	4	14	Torrance 20	Torrance
C. C. M. O. Co.	14	4	14	Torrance 22	Torrance
C. C. M. O. Co.	14	4	14	Torrance 19	Torrance
C. C. M. O. Co.	14	4	14	Torrance 23	Torrance
C. C. M. O. Co.	23	4	14	Kettler 1	Torrance
C. C. M. O. Co.	14	4	14	Torrance 24	Torrance
C. C. M. O. Co.	10	4	14	Torrance 25	Torrance
C. C. M. O. Co.	14	4	14	Torrance 27	Torrance
C. C. M. O. Co.	14	4	14	Kettler 2	Torrance
C. C. M. O. Co.	16	4	14	Del Amo 9	Torrance
C. C. M. O. Co.	15	4	14	Torrance 29	Torrance
C. C. M. O. Co.	14	4	14	Torrance 31	Torrance
C. C. M. O. Co.	14	4	14	Kettler 4	Torrance
C. C. M. O. Co.	14	4	14	Kettler 3	Torrance
C. C. M. O. Co.	15	4	14	Torrance 28	Torrance
Checot Trust No. 1	23	4	14	1	Torrance
Consolidated Mutual Oil Co.	14	4	14	1	Torrance
Consolidated Mutual Oil Co.	14	4	14	2	Torrance
Consolidated Mutual Oil Co.	14	4	14	3	Torrance
Consolidated Mutual Oil Co.	19	4	14	Oakley 1	Torrance
Consolidated Mutual Oil Co.	19	4	13	1	Torrance
Cook Drilling Corp.	14	4	14	1	Torrance
Cook Drilling Corp.	23	4	14	2	Torrance
Cook Drilling Corp.	14	4	14	3	Torrance
Cunningham & Kyle	23	4	14	1	Torrance
Dabney & Delaney	23	4	14	Lomita 1	Torrance
Doruth Oil & Investment Co.	23	4	14	1	Torrance
Federal Drilling Co.	23	4	14	Huyck 1	Torrance
Federal Drilling Co.	23	4	14	Heyman 2	Torrance
Federal Drilling Co.	23	4	14	Barrone 1	Torrance
Federal Drilling Co.	23	4	14	Gerner 2	Torrance
Fisher-Gregg Syn. Extension	14	4	14	1	Torrance
Fortuna Oil Co. Inc.	23	4	14	Clarke 1	Torrance
Fred B. Foster & Co.	10	4	14	66	Torrance
Fred B. Foster & Co.	10	4	14	67	Torrance
Fred B. Foster & Co.	23	4	14	68	Torrance
Fred B. Foster & Co.	14	4	14	69	Torrance
Geo. F. Getty	15	4	14	Torrance 4	Torrance
Geo. F. Getty	8	4	14	Torrance 5	Torrance
Geo. F. Getty	10	4	14	Torrance 6	Torrance
Geo. F. Getty	15	4	14	Torrance 7	Torrance
Geo. F. Getty	15	4	14	Torrance 8	Torrance

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES COUNTY—Continued.					
Geo. F. Getty	14	4	14	Torrance 9	Torrance
Geo. F. Getty	14	4	14	Torrance 10	Torrance
Geo. F. Getty	14	4	14	Torrance 11	Torrance
Geo. F. Getty	23	4	14	Torrance 12	Torrance
Geo. F. Getty	14	4	14	Torrance 13	Torrance
Geo. F. Getty	14	4	14	Torrance 14	Torrance
Geo. F. Getty	14	4	14	Torrance 15	Torrance
Geo. F. Getty	14	4	14	Torrance 16	Torrance
Gilmore Oil Co.	23	4	14	4	Torrance
Gilmore Oil Co.	14	4	14	3	Torrance
Grunwell Oil Corp.	23	4	14	1	Torrance
Hackworth & Brunwin	23	4	14	Hamlin 1	Torrance
Hub Oil Co.	14	4	14	Stachowicz 2	Torrance
Hub Oil Co.	14	4	14	B & C 2	Torrance
Hub Oil Co.	14	4	14	Hutslar 1	Torrance
Hub Oil Co.	14	4	14	Stachowicz 1	Torrance
International Drilling & Eng. Co.	23	4	14	1	Torrance
Huntington Signal Oil Co.	23	4	14	Barto 1	Torrance
Julian Petroleum Corp.	26	4	14	Splitzdoser 1	Torrance
Julian Petroleum Corp.	15	4	14	Mueller 3	Torrance
Julian Petroleum Corp.	23	4	14	Bell-Johnson 4	Torrance
Julian Petroleum Corp.	23	4	14	Cook 2	Torrance
Keefe Risden Co.	23	4	14	1	Torrance
Lacal Oil Co.	31	4	14	2	Torrance
Lang-Wall, Inc.	23	4	14	4	Torrance
Leonard Wells, Inc.	23	4	14	Leonard 11	Torrance
Fred R. Letcher	14	4	14	Higgs 1	Torrance
Lora J. Oil Co.	23	4	14	2	Torrance
McDonnell Corp.	23	4	14	1	Torrance
McDonnell Corp	14	4	14	2	Torrance
McDonnell Corp	14	4	14	3	Torrance
McKeon Drilling Co.	22	4	14	Torrance 1	Torrance
J. F. McMahon	23	4	14	1	Torrance
Midway Northern Oil Co.	15	4	14	2	Torrance
Midway Northern Oil Co.	14	4	14	3	Torrance
James F. Nugent Oil Co.	23	4	14	Community 1	Torrance
Painted Hills Oil Assn.	23	4	14	1-L	Torrance
Pan American Petroleum Co.	15	4	14	Lomita 1	Torrance
A. M. Parsons & Fred H. Hammer	15	4	14	1	Torrance
H. H. Patton	14	4	14	1	Torrance
H. H. Patton	14	4	14	2	Torrance
Petroelum Midway Co. Ltd.	15	4	14	Stock Com. 1	Torrance
Petroleum Midway Co. Ltd.	23	4	14	Webster Com. 1	Torrance
Petroleum Midway Co. Ltd.	14	4	14	De Witt 1	Torrance
Petroleum Midway Co. Ltd.	15	4	14	Wilson Com. 2	Torrance
Petroleum Midway Co. Ltd.	15	4	14	Wilson Com. 3	Torrance
Petroleum Midway Co. Ltd.	23	4	14	Deitrick 1	Torrance
Petroleum Midway Co. Ltd.	15	4	14	Stock Com. 2	Torrance
Petroleum Midway Co. Ltd.	14	4	14	Walker Nuckles 1	Torrance
Petroleum Midway Co. Ltd.	23	4	14	Thornburg 1	Torrance
Petroleum Midway Co. Ltd.	14	4	14	Post Houts 2	Torrance
Petroleum Midway Co. Ltd.	15	4	14	Wilson Com. 5	Torrance
Petroleum Midway Co. Ltd.	14	4	14	Wilson Com. 4	Torrance
Petroleum Midway Co. Ltd.	14	4	14	Mitchell 1	Torrance
Petroleum Midway Co. Ltd.	15	4	14	Wilson Com. 7	Torrance
Petroleum Midway Co. Ltd.	15	4	14	Wilson Com. 6	Torrance
Petroleum Securities Co.	15	4	14	2	Torrance
Petroleum Securities Co.	15	4	14	3	Torrance
Petroleum Securities Co.	15	4	14	4	Torrance
Petroleum Securities Co.	15	4	14	5	Torrance
Petroleum Securities Co.	22	4	14	6	Torrance
Petroleum Securities Co.	15	4	14	8	Torrance
Petroleum Securities Co.	15	4	14	9	Torrance
Petroleum Securities Co.	15	4	14	10	Torrance
Petroleum Securities Co.	22	4	14	7	Torrance
Ring Petroleum Corp.	23	4	14	1	Torrance
Barnett Rosenburg	14	4	14	1	Torrance
Barnett Rosenburg	23	4	14	Arline 1	Torrance
Barnett Rosenburg	14	4	14	Gladys 2	Torrance
Sanita Petroleum Co.	23	4	14	1	Torrance
Security Oil Syn. No. 2	23	4	14	Eason 1	Torrance
Selby & Root Co.	14	4	14	2	Torrance
Selby & Root Co.	23	4	14	3	Torrance
Sentinel Oil Co.	15	4	14	Martin 1	Torrance
Sentinel Oil Co.	23	4	14	Hunter 1	Torrance
Sentinel Oil Co.	24	4	14	Joughin 2	Torrance
Shell Co.	13	4	14	Keystone Com. 1	Torrance
Shell Co.	24	4	14	March 1	Torrance

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES COUNTY—Continued.					
Shell Co.	13	4	14	March 2	Torrance
Sherman Oil Co.	23	4	14	Torrance 1	Torrance
Southern California Drilling Co.	23	4	14	1	Torrance
Southern California Drilling Co.	23	4	14	2	Torrance
Southern California Drilling Co.	23	4	14	3	Torrance
Southwestern Development Co.	23	4	14	Ruddock 1	Torrance
Sprague Oil Co.	23	4	14	Hugh 1	Torrance
Standard Oil Co.	23	4	14	Kettler 1	Torrance
Standard Oil Co.	8	4	14	Kirk Com. 5	Torrance
Star Petroleum Co.	23	4	14	G & A 1	Torrance
Star Petroleum Co.	11	4	14	B & R 1	Torrance
Superior Oil Co.	14	4	14	Torrance 7	Torrance
Superior Oil Co.	14	4	14	Torrance 8	Torrance
Superior Oil Co.	14	4	14	Torrance 10	Torrance
Superior Oil Co.	14	4	14	Torrance 14	Torrance
Superior Oil Co.	14	4	14	Torrance 13	Torrance
Superior Oil Co.	14	4	14	Torrance 11	Torrance
Superior Oil Co.	14	4	14	Torrance 12	Torrance
United States Royalties Co.	14	4	14	10	Torrance
United States Royalties Co.	10	4	14	16	Torrance
United States Royalties Co.	14	4	14	11	Torrance
United States Royalties Co.	10	4	14	15	Torrance
United States Royalties Co.	23	4	14	18	Torrance
United States Royalties Co.	23	4	14	13	Torrance
Universal Cons. Oil Co.	23	4	14	Moore 2	Torrance
Universal Cons. Oil Co.	23	4	14	Moore 5	Torrance
Universal Cons. Oil Co.	23	4	14	Moore 6	Torrance
Universal Cons. Oil Co.	23	4	14	Moore 3	Torrance
Universal Cons. Oil Co.	23	4	14	Moore 4	Torrance
Universal Cons. Oil Co.	23	4	14	Moore 7	Torrance
Universal Cons. Oil Co.	23	4	14	Jones 1	Torrance
Universal Cons. Oil Co.	22	4	14	Moore 8	Torrance
Van Alen Oil Co.	23	4	14	1	Torrance
Van Alen Oil Co.	23	4	14	2	Torrance
Van Alen Oil Co.	14	4	14	3	Torrance
Wm. Vurpillat	23	4	14	1	Torrance
White Star Oil & Refining Co.	23	4	14	Whitney 1	Torrance
W. C. Bramham	17	1	11	1	----------
L. B. Chase Oil Co.	32	3	13	1	----------
Davis & Macmillan Co.	29	3	13	8	----------
R. R. Edwards, Trustee	16	1	15	Van Nuys Com. 1	----------
General Petroleum Corp.	28	3	13	Gardena 1	----------
General Petroleum Corp.	29	3	13	Samuel J. White 1	----------
General Petroleum Corp.	29	3	13	Austin 1	----------
Globe Petroleum Corp.	19	3	12	Vallecinto 1	----------
Golden Gate Oil Co.	23	1	16	2	----------
Geo. W. Hoyt	3	1	18	1	----------
Huntington-Downey Oil Co.	17	3	12	2	----------
Magnolia Petroleum Syn. No. 1	1	3	13	1	----------
Marblehead Land Co.	7	2	18	1	----------
Petroleum Midway Co. Ltd.	34	3	14	Lewis 1	----------
Petroleum Midway Co. Ltd.	28	3	11	Neal One 1	----------
Rancho de la Puente Oil Co.	34	1	10	1	----------
Barnett Rosenburg	35	3	14	1	----------
Shell Co.	33	3	13	Reyes 1	----------
Standard Oil Co.	27	2	14	Farrell 1	----------
Union Oil Co.	33	3	13	Carson 1	----------
Union Oil Co.	33	3	13	Hellman 1	----------
MONTEREY COUNTY:					
W. Harriman Jones	20	19	6	1	----------
NAPA COUNTY:					
Napetro Producers Syn.	21	8	3	2	----------
ORANGE COUNTY:					
Union Oil Co.	18	3	9	Graham & Loftus 55	Coyote Hills
Carmen F. Carlson	30	5	11	1	Huntington Beach
John I. Carlson	30	5	11	1	Huntington Beach
Central Oil Co. of L. A.	2	6	11	Community 3	Huntington Beach
Down East Co.	27	5	11	2	Huntington Beach
Petroleum Midway Co. Ltd.	35	5	11	Plavan 2	Huntington Beach
Petroleum Midway Co. Ltd.	11	6	11	Brown 3	Huntington Beach
Standard Oil Co.	34	5	11	Bolsa 14	Huntington Beach
Standard Oil Co.	34	5	11	Hunt. C. 1-A	Huntington Beach
Standard Oil Co.	34	5	11	Bolsa 15	Huntington Beach
Standard Oil Co.	27	5	11	Orange Co. Title Co. 1-A	Huntington Beach
Union Oil Co.	35	5	11	Copeland 22	Huntington Beach
Union Oil Co.	34	3	9	Yorba Linda Group 10	Richfield

Company	Sec.	Twp.	Range	Well No.	Field
ORANGE COUNTY—Continued.					
Union Oil Co.	33	3	9	Yorba Linda Group 11	Richfield
Union Oil Co.	34	3	9	Yorba 2	Richfield
Charles T. B. Jones	16	4	11	1	----------
Orange Community Oil Assn.	29	4	9	1	----------
Penn Drilling Co.	28	4	9	1	----------
Superior Oil Co.	7	4	10	Brookhurst 1	----------
SAN BERNARDINO COUNTY:					
Marker & Collier	31	2	7	Ranger 1	----------
San Bernardino & Colton Oil Co.	16	1	4	2	----------
SAN MATEO COUNTY:					
Guarantee Oil Co.	15	6	5	4	----------
SONOMA COUNTY:					
Alexander Valley Oil Co.	8	9	8	2	----------
TULARE COUNTY:					
Pixley Development Co.	22	23	25	1	----------
VENTURA COUNTY:					
G. W. Short	4	1	20	1	Conejo
Trinitas Oil Co.	4	1	20	1	Conejo
Trinitas Oil Co.	4	1	20	2	Conejo
Trinitas Oil Co.	4	1	20	3	Conejo
Trinitas Oil Co.	4	1	20	4	Conejo
G & E Oil Co.	13	4	19	1	Piru
Oak Ridge Oil Co.	13	3	21	Harvey 12	South Mountain
General Petroleum Corp.	28	3	23	Barnard 3-A	Ventura
R. L. Hinckley	33	4	23	16	Ventura
King & Morris	19	4	19	K & M 1	----------
Johnson-Thompson et al.	17	2	19	1	----------
Glen A. Martin	28	4	18	1	----------
Oak Ridge Oil Co. Lot 43	------	2	21	McFarland 1	----------
Sespe Oil Co.	33	4	20	Dudley 2	----------

ADMINISTRATIVE DIVISION.

WALTER W. BRADLEY, Deputy State Mineralogist.

New Publications.

During the period covered by this issue (September 15, 1923–January 15, 1924), the following Bureau publications have been made available for distribution:

Bulletin No. 93, "California Mineral Production for 1922," by Walter W. Bradley. For free distribution.

Summary of Operations, California Oil Fields, Vol. 8, No. 12, June, 1923; Vol. 9, Nos. 1, 2, and 3, July, August, and September, 1923, respectively.

Mining in California, September, 1923, Vol. 19, No. 4.

Commercial Mineral Notes: Nos. 6 to 9 (inc.), September to December, respectively.

As the timeliness of publication is important in the case of the lists of 'mineral deposits wanted' and 'minerals for sale,' this information is issued in the form of a mimeographed sheet once a month since the change to a quarterly status of 'Mining in California.' This list is mailed, free of charge, to those on the mailing list for the quarterly.

In connection with the monthly 'Commercial Mineral Notes,' it has been gratifying to receive the many congratulatory letters and statements telling of its value and the practical results obtained from it. We have been informed of actual business and of sales directly traceable to the data thus disseminated.

Mails and Files.

The Bureau maintains, in addition to its correspondence file, a mine report file which includes reports on some 7500 mines and mineral properties in California. Also there is available to the public a file of the permits granted to mining and oil corporations by the State Commissioner of Corporations.

During the period of July 1, 1923, to January 15, 1924, there were 3750 letters received and answered at the San Francisco office alone, covering almost every conceivable phase of prospecting, mining and developing mineral deposits, reduction problems, and marketing of refined products.

DIVISION OF MINERALS AND STATISTICS.

Statistics, Museum, Laboratory.

WALTER W. BRADLEY, Deputy State Mineralogist.

STATISTICS.

Estimate of 1923 Output.

The total value of the mineral production of California for the year 1923 is conservatively estimated to have been approximately $270,472,000. This is, in part, detailed in the tabulation below; but, as there are more than fifty mineral substances on California's commercial list, it is impractical at this early date to obtain anything approaching definite figures on other than the more important items. The blank report forms are being mailed out to the operators in all mineral lines, and the date of publication of the final and complete report will depend upon the promptness of their replies. The State Mining Bureau urges the hearty cooperation of all concerned, to the end that the results may be made known early.

This estimated total of $270,472,000 is an increase of over $25,000,000 above the 1922 production and surpasses by more than $2,000,000 the previous record value of $268,157,472 of the year 1921. This increase in value is due principally to petroleum, which shows a new record quantity for 1923, which is nearly double the previous record figure of the year 1922 in number of barrels. Even with the resultant lower prices prevailing, it is estimated that the 1923 petroleum yield will show an increase of approximately $22,000,000 in total value over that of 1922.

Though reports from a number of the gold mining districts have been indicative of renewed interest and renewing operations, receipts of bullion at the mint and smelters show a decrease for the year. Apparently some of the larger lode mines have not operated to their full capacity. There has been considerable activity in the Alleghany district, Sierra County, and in the Grass Valley district, Nevada county. Smelter reports give increased quantities for copper and lead, and as a consequence a larger amount of silver, though the last named will show a lessened total value owing to cessation after June of $1 per ounce purchases by the Government under the Pittman Act.

As the demand for building materials continued active during 1923, nearly all items of the structural group will show increased quantities and total values, especially cement, brick, hollow building tile, crushed rock, sand and gravel. Magnesite shipments increased about 25 per cent. The demand for this material for stucco and other plastic purposes is showing a healthy growth. There were no notable changes in the general status of the miscellaneous 'industrial' group, nor among the salines, except pottery clays and borax. Demand for architectural terra cotta and tile has caused increased shipments of pottery clays of all grades. Reports from the borax producers indicate a 50 per cent increase in borate minerals for 1923.

The estimated quantities and values for 1923 are tabulated as follows:

$13,250,000	gold.
2,771,000	(3,400,000 fine oz.) silver.
3,942,000	(27,000,000 lb.) copper.
605,000	(8,400,000 lb.) lead.
20,000	iron and manganese ores.
409,000	(6,200 flasks) quicksilver.
100,000	(800 fine oz.) platinum.
195,000,000	(262,000,000 bbl.) petroleum.
7,475,000	(115,000,000 M. cu. ft.) natural gas.
17,000,000	(10,000,000 bbl.) cement.
12,000,000	crushed rock, sand and gravel.
9,000,000	brick and hollow building tile.
840,000	(70,000 tons) magnesite.
1,500,000	other structural materials, including granite, lime, marble et al.
3,000,000	miscellaneous 'industrial' minerals (including asbestos, barytes, pottery clays, dolomite, feldspar, gems, graphite, diatomaceous earth, limestone, lithia, mineral water, shale oil, silica, talc, et al.).
3,560,000	salines (including borates, calcium and magnesium chlorides, potash, salt, soda).
$270,472,000	total value.

MUSEUM.

The Museum of the State Mining Bureau possesses an exceptionally fine collection of rocks and minerals of both economic and academic value. It ranks among the first five of such collections in North America; and contains not only specimens of most of the known minerals found in California, but much valuable and interesting material from other states and foreign countries as well.

Mineral specimens suitable for exhibit purposes are solicited, and their donation will be appreciated by the State Mining Bureau as well as by those who utilize the facilities of the collection.

The exhibit is daily visited by engineers, students, business men, and prospectors, as well as tourists and mere sightseers. Besides its practical use in the economic development of California's mineral resources, the collection is a most valuable educational asset to the State and to San Francisco.

LABORATORY.

FRANK SANBORN, Mineral Technologist.

The State Mining Bureau since its organization has supplied the necessary identification of minerals, without cost, to thousands of individuals, and has been largely instrumental in bringing to light those of commercial importance in California.

At irregular intervals new uses are found for minerals; as a result, the market for the particular mineral is stimulated or created, and the prospector adds a new name to his list of commercial products.

Recently the aluminum silicates sillimanite, andalusite, and cyanite have been in demand. These minerals are not easily identified in the

field, therefore prospectors who have made inquiry at this Bureau for a description of the silicates have been supplied with small samples. Counties in which some or all of these minerals are known to occur are: Mono, Riverside, Inyo, Imperial, and San Bernardino.

During the four months' period, September 15, 1923, to January 15, 1924, 1223 samples were received and determined at the laboratory.

LIBRARY.

FOREST L. CAMPBELL, Librarian.

In addition to the numerous standard works, authoritative information on many phases of the mining and mineral industry is constantly being issued in the form of reports and bulletins by various government agencies.

The library of the State Mining Bureau contains some five thousand selected volumes on mines, mining and allied subjects, and it is also a repository for reports and bulletins of the technical departments of federal and state governments and of educational institutions, both domestic and foreign.

It is not the dearth of the latter publications, but rather a lack of knowledge of just what has been published and where the reports may be consulted or obtained, that embarrasses the ordinary person seeking specific information.

To assist in making the public acquainted with this valuable source of current technical information, 'Mining in California' contains under this heading a list of all books and official reports and bulletins received, with names of publishers or issuing departments.

Files of all the leading technical journals will be found in the library, and county and state maps, topographical sheets and geological folios. Current copies of local newspapers published in the mining centers of the State are available for reference.

The library and reading room are open to the public during the usual office hours, when the librarian may be freely called upon for all necessary assistance.

OFFICIAL PUBLICATIONS RECEIVED.

Governmental.

U. S. Geological Survey:

Annual Report, 44th, of the Director to the Secretary of the Interior for the fiscal year ending June 30, 1923.

Bulletin No. 78—The Twentymile Park District of the Yampa Coal Field, Routt Co., Colorado. By Marius R. Campbell.

Bulletin No. 755-A—The Alaskan Mining Industry in 1922. By Alfred H. Brooks and Stephen R. Capps.

Bulletin No. 755-B—The Metalliferous Deposits of Chitina Valley, Alaska. By Fred H. Moffit.

Bulletin No. 760-A—Pedestal Rocks in the Arid Southwest. By Kirk Bryan.

Bulletin No. 749—Geology of the Tullock Coal Field. By G. S. Rogers.

Prof. Paper No. 132-B—A New Fauna from the Colorado Group of Southern Montana. By John B. Reeside, Jr.

Prof. Paper No. 133—The Correlation of the Vicksburg Group. By C. Wythe Cooke; and The Forminifera of the Vicksburg Group. By Joseph A. Cushman.

Prof. Paper No. 132-C—Notes on the Geology of Green River Valley between Green River, Wyoming, and Green River, Utah.

Water Supply Paper No. 527—Surface Water Supply of the United States, 1921. Part VII. Lower Mississippi River Basin. By Nathan C. Grover.

Water Supply Paper No. 520-A—A Variation in Annual Run-off in the Rocky Mountain Region. By Robt. Follansbee.

Water Supply Paper No. 528—Surface Water Supply of the United States, 1921. Part VIII. Western Gulf of Mexico Basin.

Water Supply Paper No. 502—Part II. South Atlantic Slope and Eastern Gulf of Mexico Basins.

Water Supply Paper No. 515—Surface Water Supply of Hawaii in 1919. By N. C. Grover.
Water Supply Paper No. 506—Surface Water Supply of the United States, 1919–1920. Part VI. Missouri River Basin.
Water Supply Paper No. 494—Outline of Ground-Water Hydrology. By Oscar E. Meinzer.
Water Supply Paper No. 505—Surface Water Supply of the United States. Part V. Hudson Bay and Upper Mississippi River Basins. By N. C. Grover et al.
Water Supply Paper No. 524—Part IV. St. Lawrence River Basin. By N. C. Grover et al.

Mineral Resources of the United States:
Potash in 1922. By George R. Mansfield.
Platinum and Allied Minerals in 1922. By J. N. Hill.
Clay in 1922. By Jefferson Middleton.
Tin in 1922. By B. L. Johnson.
Talc and Soapstone in 1922. By Edward Sampson.
Silver, Copper, Lead and Zinc in the Central States in 1922. By J. P. Dunlop and F. Begeman.
Fuller's Earth in 1922. By Jefferson Middleton.
Arsenic in 1922. By V. C. Heikes and G. F. Loughlin.
Magnesium and Its Compounds in 1922. By J. M. Hill.
Quicksilver in 1922. By F. L. Ransome.
Strontium in 1922. By George W. Stose.
Graphite in 1922. By Arthur H. Redfield.
Nitrates in 1922. By George R. Mansfield.
Asbestos in 1922. By Edward Sampson.
Coal in 1919, 1920, 1921. By F. G. Tryon and Sydney A. Hale.
Phosphate Rock in 1922. By G. R. Mansfield.
Gypsum in 1922. By K. W. Cottrell.
Slate in 1922. By G. F. Loughlin and A. T. Coons.
Barytes and Barium Products in 1922. By G. W. Stose.
Secondary Metals in 1922. By J. P. Dunlop.
Sulphur and Pyrites in 1922. By H. A. C. Jenison and H. M. Meyer.
Mica in 1922. By B. H. Stoddard.
Gold, Silver, Copper and Lead in South Dakota and Wyoming in 1922. By C. W. Henderson.
Lime in 1922. By G. F. Loughlin and A. T. Coons.
Silica in 1922. By Frank J. Katz.
Gold, Silver, Copper, Lead and Zinc in Idaho and Washington in 1922. By C. N. Gerry.
Sand and Gravel in 1922. By L. M. Beach.
Mineral Waters in 1922. By W. D. Collins.
Abrasive Materials in 1922. By L. M. Beach and A. T. Coons.
Gold, Silver, Copper, Lead and Zinc in New Mexico and Texas in 1922. By Chas. W. Henderson.
Cement in 1922. By E. F. Burchard and B. W. Bagley.

U. S. Coast and Geodetic Survey:
Annual Report of the Director to the Secretary of Commerce for the year ending June 30, 1923.
Serial No. 240—Special Publication No. 95—Precise Leveling in Georgia. By Henry G. Avers.

U. S. Bureau of Mines:
Annual Report, 13th, of the Director for the Fiscal Year ending June 30, 1923.
A Handbook for Miners—Self-Contained Mine Rescue Oxygen Breathing Apparatus. By D. J. Parker et al.
Bulletin No. 170—Extinguishing and Preventing Oil and Gas Fires. By C. P. Bowie.
Bulletin No. 220—Bibliography of Petroleum and Allied Substances, 1921. By E. H. Burroughs.
Bulletin No. 232—Manual for Oil and Gas Operations. By T. E. Swigart and C. E. Beecher.
Bulletin No. 215—Timbering of Metal Mines. By E. A. Hobrook et al.
Bulletin No. 208—The Electrothermic Metallurgy of Zinc. By B. M. O'Harra.

Technical Paper No. 304—Water-Gas Tar Emulsions. By W. W. Odell.
Technical Paper No. 302—Leaching Nonsulphide Copper Ores with Sulphur Dioxide. By C. E. van Barnevel.
Technical Paper No. 262—Certain Interfacial Tension Equilibria Important in Flotation. By W. H. Coghill and Carl O. Anderson.
Technical Paper No. 274—Efficiencies in the Use of Bituminous Coking Coal as Water-Gas Generator Fuel. By W. W. Odell.
Technical Paper No. 289—Change Houses in the Lake Superior Region. By Cleve E. Kindall.
Technical Paper No. 310—Recovery of Gasoline from Uncondensed Still Vapors. By D. B. Dow.
Technical Paper No. 319—Methods of Decreasing Evaporation Losses of Petroleum. By J. H. Wiggins.

Report of Investigations:
Serial No. 2510—The Use of Highly Volatile Natural-Gas Gasoline as a Refrigerant.—By L. D. Wyant.
Serial No. 2511—Survey of Pacific Coast Petroleum Products. Part 3—Burning and Fuel Oils.—By Earl C. Lane and N. F. LeJeune.
Serial No. 2512—Graphite for Steel-Melting Crucibles.—By R. T. Stull and G. A. Bole.
Serial No. 2513—Preparation and Detonating Properties of Cyanuric Triazide.—By C. A. Taylor and Wm. H. Rinkenbach.
Serial No. 2514—Explosives used in June, 1923.—By W. W. Adams.
Serial No. 2515—The Concordia Type RM 6-o.d. Electric Cap Lamp, Approval No. 19.—By L. C. Ilsley and A. B. Hooker.
Serial No. 2516—Coal-Mine Fatalities in July, 1923.—By W. W. Adams.
Serial No. 2517—Comparative Engine Tests with Crude, Acid-Refined, and Silica-Gel Refined Motor-Benzol.—By A. C. Fieldner and G. W. Jones.
Serial No. 2518—Forms of Sulphur in Steamed Coke and their Action in the Blast Furnace.—By John H. Thompson.
Serial No. 2519—Anthracite Substitutes.—By O. P. Hood.
Serial No. 2520—Fuels Available for Domestic Use as Substitutes for Anthracite Coal.—By Rudolph Kudlich.
Serial No. 2521—Oxygen-Oil Explosions.—By J. J. Jakowsky and E. W. Butzler.
Serial No. 2522—Explosives Used in July, 1923.—By W. W. Adams.
Serial No. 2523—Additions, Removals and Changes in Permissible List of Explosives from January 1, 1923, to August 31, 1923.—By J. E. Crawshaw.
Serial No. 2524—Progress in Blast-Furnace Research.—By P. H. Royster, T. L. Joseph, and S. P. Kinney.
Serial No. 2525—Eighth Semi-Annual Motor Gasoline Survey.—By N. F. LeJeune and H. M. Smith.
Serial No. 2526—Strength and Sensitiveness of TNT as Determined by the Laboratory "Sand-Test" Bomb.—By C. A. Taylor and R. D. Leitch.
Serial No. 2527—Air Measurement Methods for Experimental Work on Fan-Pipe Installations.—By G. E. McElroy and A. S. Richardson.
Serial No. 2528—The Transportation of Explosives in and about Mines.—By L. C. Ilsley.
Serial No. 2529—Coal-Mine Fatalities in August, 1923.—By W. W. Adams.
Serial No. 2530—Lifting Costs at Oil Well Properties.—By H. C. George.
Serial No. 2531—Effect of Cooling Systems on Evaporation Losses of Gasoline.—By Ludwig Schmidt.
Serial No. 2532—Drilling and Broaching in Slate Quarries.—By Oliver Bowles.
Serial No. 2533—The Preparation and Properties of Normal Lead Trinitroresorcinate.—By C. A. Taylor and W. H. Rinkenbach.
Serial No. 2534—Bibliography of Magnesian Cements.—By G. H. West, R. L. Sebastian and W. A. Darrow.
Serial No. 2535—Who Pays for the Accidents?—By Richard V. Ageton.
Serial No. 2536—Explosives Used in August, 1923.—By W. W. Adams.
Serial No. 2537—Relation of Operating Practice to Composition of Light Oil from Carbureted Water Gas.—By R. L. Brown, E. F. Pohlman, and H. G. Berger.
Serial No. 2538—Coal-Mine Fatalities in September, 1923.—By W. W. Adams.

Serial No. 2539—Carbon-Monoxide Hazards from Tobacco Smoke.—By G. W. Jones, W. P. Yant, and L. B. Berger.
Serial No. 2540—Friction Factors for Fan-Piping used in Mine Ventilation.—By G. E. McElroy and A. S. Richardson.
Serial No. 2541—Electrical Safety Inspection; Suggestions for Mine-Safety Engineers.—By L. C. Ilsley.
Serial No. 2542—Graphites for Brass-Melting Crucibles.—By R. T. Stull and L. E. Geyer.
Serial No. 2543—Explosives Used in September, 1923.—By W. W. Adams.
Serial No. 2544—Lead-Zinc Separation by Volatilization.—By G. L. Oldright.
Serial No. 2545—Determination of the Fineness of Powdered Coal.—By W. A. Selvig and W. L. Parker.
Serial No. 2546—Mine Timber in Pennsylvania Coal Mines.—By Harry E. Tufft.
Serial No. 2547—A Floating Roof for Oil Tanks.—By Ludwig Schmidt.
Serial No. 2548—Solubility of Finely Divided Rock Dusts in Water, Kerosene, and Alcohol.—By W. M. Myers.
Serial No. 2549—Coal-Mine Fatalities in October, 1923.—By W. W. Adams.

Smithsonian Institution:
The Foraminifera of the Atlantic Ocean.—By J. A. Cushman.
The History of the Electric Light.—By Henry Schroeder.

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Report of the Librarian for the Fiscal Year ending June 30, 1923.
Annual Report of the Chief of Engineers, U. S. Army, 1923. Parts I, II and III.

Director of the Mint:
Annual Report for the Fiscal Year ending June 30, 1923.

Federal Power Commission:
Third Annual Report for the Fiscal Year ending June 30, 1923.

Alabama, Geological Survey of:
Bulletin No. 26—Statistics of the Mineral Resources of Alabama for 1921. By J. H. Wingard.

Illinois State Geological Survey:
Extract A from Bulletin No. 27.
Analysis of Illinois Coals. By G. W. Hawley.

Kansas, State Geological Survey of:
Bulletin No. 5—Elk City Gas Field. By Chas. W. Boughton.
Bulletin No. 6—Oil and Gas Resources of Kansas.
Part I—General Geology of Oil and Gas. By R. C. Moore.
Part II—Geology of Kansas. By R. C. Moore.
Part V—Allen and Neosho Cos. By R. C. Moore and E. R. Elledge.
Part VI—Wilson and Montgomery Cos. By C. W. Boughton.
Bulletin No. 8—The Economic Geology of the Arkansas City District. By Emmett R. Elledge.

Kentucky Geological Survey:
Building Stones of Kentucky. By C. H. Richardson.
Fluorspar Deposits of Kentucky. By Louis W. Currier.

Michigan, Geological Survey Division: Production and Value of Mineral Products in Michigan for 1921 and Prior Years.

Pennsylvania, Department of Forests and Waters:
Bulletin No. 79—Tidioute Oil Pool, Warren Co., Pa. By Meredith E. Johnson.
Bulletin No. 80—Coal Beds in Northern Somerset Co., Pa. By James D. Sisler.

Tennessee, Division of Geology: Bulletin No. 30—A Study of the Smaller Undeveloped Water Powers of Tennessee. By J. A. Switzer, Hydraulic Engineer.

Washington, State of, Division of Geology: Bulletin No. 28—Geological Investigation of the Coal Fields of Western Whatcom County, Washington. By Olaí P. Jenkins.

South Australia:
Geological Survey of: Bulletin No. 10—The Building Stones of South Australia. By R. Lockhard Jack.
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Index to the Transactions, Proceedings and Reports, Vols. XXV–XLIV.
Woods and Forests Department: Annual Progress Report upon State Forest Administration in South Australia.

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Department of Mines: Summary Report, 1922, Part A and Part D.
Memoir No. 133—The Southern Part of the Sydney Coal Field, Nova Scotia. By A. O. Hayes and W. A. Bell.
Memoir No. 134—Brockville-Mallorytown Map-Area, Ontario. By J. F. Wright.
Memoir No. 127—La Region de Beauceville. By B. R. McKay.
Geological Survey: Index to Reports 1906–1910 and Summary Reports 1905–1916. By F. J. Nicholas.
Summary Report, 1922, Part B.
Summary Report, 1922, Part C.
China: Reprint from Far Eastern Review, "Gold-Ore Deposits of the Linglungshan Region, Tsaoyuen, Shantung, China." By Y. Tsenshan Wang.
Japan: Imperial Geological Survey:
Report No. 88—Landslides at Minowamura in the Prefecture of Ful Fukushima. By Rokuro Kimura, Geologist.
Report No. 89—The Geology and Mineral Deposits of British East Africa. By Kyukichi Watanabe, Geologist.
Explanatory Text of the Geological Map of Japan. By Tsutomu Ogura.
Mexico, Instituto Geologico de: Boletin Num. 42—Algunas Faunas Cretacicas de Zacatecas, Durango y Guerrero. By Dr. E. Bose.
Ontario: Department of Mines:
Vol. XXXI, Part X, 1922.
Vol. XXXI, Part IX, 1922.
Thirty-First Annual Report of the Ontarion Department of Mines.
Geology of the Wataboag Area. By Douglas G. H. Wright.
Phillipine Journal of Science, The—October, November, 1923.
Queensland:
Department of Mines: Annual Report of the Under Secretary for Mines in 1922.
Geological Survey: Publication No. 273—Mesozoic Insects of Queensland. By R. J. Tillyard and B. Dunstan.
Spain, Real Academia de Ciencias y Artes, Barcelona: Vol. XVII, Num. 23—Correccion Bacteriologica del Agua de Bebida por Medio de los Hipocloritos Alcinos y por El Cloro Liquido. By M. Iltre et al.
Transvaal, Chamber of Mines: Monthly Analyses of Gold Production in the Transvaal, July, August, September, October, November.
Victoria, Department of Mines:
Memoir No. 14—The Ballarat Goldfield, with Plates and Figures. By W. Baragwanath.
Memoir No. 48—The Morning Star, Victorian Al, New Loch Fyne, and Start of the West Mines, Woods Point District. By H. S. Whitelaw.

Societies and Educational Institutions.

American Institute of Mining and Metallurgical Engineers, Transactions of the, Vol. LXIX.
American Philosophical Society, Vol. LXII, Nos. 3, 4, and 5.
California Academy of Sciences:
Fourth Series, Vol. XII, Nos. 6 to 21, inc.
Expedition of the California Academy of Sciences to the Gulf of California in 1921.
Vol. XIII, Nos. 1 to 6, inc.
Proceedings of, Vol. XII, No. 26.
Colorado Scientific Society:
Engineering Features of the Moffat Tunnel. By D. W. Brunton.
Institution of Mining and Metallurgy:
Transactions of, Thirty-first Session, 1921–1922, Vol. XXXI.
Bulletin for October.
Mining and Metallurgical Society of America: Bulletin No. 165—Special Report on Supply, Consumption and Stocks of Petroleum (Crude and Refined) in the United States.
Bulletin No. 162—Reports of the Sub-Committees on Petroleum, Chrome and Graphite in Connection with the Committee on Foreign and Domestic Mining Policy.

University of California: Bulletin of the Department of Geological Sciences:
Vol. 14, No. 5—Fauna of the Sooke Formation, Vancouver Island. By Bruce L. Clarke and Ralph Arnold—With a Description of a New Coral by T. Wayland Vaugn.
Vol. 14, No. 6—The San Lorenzo Group of the San Emigdio Region, California. By C. M. Wagner and Karl H. Schilling.
Vol. 14, No. 7—Revision of the Rimella-Like Gastropods from the West Coast of North America. By Bruce L. Clarke and Dorothy Kemper Palmer.
Vol. 14, No. 8—A Fauna from the Middle Eocene Shales near Vacavilla, California. By Dorothy Palmer.
Vol. 14, No. 9—Some Eocene Foraminifera near Vacaville, California. By G. Dallas Hanna.
Vol. 14 No. 10—Basin Range Structure in the Great Basin. By George D. Louderback.
Vol. 14, No. 11—Some New Forms of West Coast Fossil Echinoidea. By Merle C. Israelsky.
Vol. 14, No. 12—Alticamelus Alexandrae, A New Camel from the Barstow Upper Miocene of the Mojave Desert. By Pirie Davidson.
University of Montana: Bulletin No. 5—The Location, Representation and Patenting of Mineral Lands in Montana. Prospecting and Leasing of Coal, Oil, Oil Shale, Gas, Phosphate and Sodium Deposits. By A. E. Adami.
University of New Mexico, State: Bulletin No. 114—Tables for Determining Common Minerals and Rocks. By Robert W. Ellis.
New York State Museum Bulletin 249–250—The Magnetite Iron Ore Deposits of Southeastern New York. By R. J. Colony.

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The Big Sandy Valley. By W. R. Jillson.

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Japan, Imperial Geological Survey:
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Yamaguchi.
Murozumi.
U. S. Geol. Survey Topographic Sheets:
Inglewood, Cal., Quadrangle.
Englebright Ranch Quadrangle, Fresno Co., Cal.
Torrance, Cal.
Sawtelle, Cal.
Clovis, Fresno Co., Cal., Quadrangle.
Laguna Seca Ranch Quadrangle, Cal.
Orangedale School Quadrangle, Fresno Co.
Compton, Cal.
Blanchardville, Wis.
Bowling Green, Ky.
Brownsville, Ky.
Dongola, Ill.
Grays Lake, Ill.–Wis.
Jonesboro, Ill.–Mo.
Lopena Island, Tex.
Mammoth Cave, Ky.
Monmouth, Ill.
Mount Angel, Ore.
Watts, Cal., Quadrangle.
Bullard Quadrangle, Fresno Co., Cal.
Terra Loma School District Quadrangle, Fresno Co., Cal.
Herdon Quadrangle, Cal.
Levis, Fresno Co., Cal., Quadrangle.
Monocline Ridge Quadrangle, Fresno Co.
Malaga Quadrangle, Fresno Co.
Venice, Cal.
Wisdom Well, Cal.
Pahala, H. T.
Reedsport, Ore.
Ronceverte, W. Va.–Va.
Saltilla Ranch, Tex.
Santa Clara, N. Y.
Sierra Madera, Tex.
South Wayne, Wis.–Ill.

Current Magazines on File.

For the convenience of persons wishing to consult the technical magazines in the reading room, a list of those on file is appended:

American Petroleum Institute, New York.
Architect and Engineer, San Francisco.
Arizona Mining Journal, Phoenix, Arizona.
Asbestos, Philadelphia, Pennsylvania.
Brick and Clay Record, Chicago.
Cement, Mill and Quarry, Chicago, Illinois.
Chemical Engineering and Mining Review, London, England.
Engineering and Mining Journal-Press, New York.
Financial Insurance News, Los Angeles, California.
Graphite, Jersey City.
Journal of Electricity and Western Industry, San Francisco.
Metallurgical and Chemical Engineering, New York.
Mining and Engineering Record, Vancouver, B. C.
Mining and Oil Bulletin, Los Angeles.
Oil Age, Los Angeles.
Oil and Gas Journal, Tulsa, Oklahoma.
Oil News, Galesburg, Illinois.
Oildom, New York.
Oil, Paint and Drug Reporter, New York.
Oil Trade Journal, New York.
Oil Weekly, Houston, Texas.
Petroleum Age, New York.
Petroleum Record, Los Angeles.
Petroleum World, Los Angeles.
Queensland Government Mining Journal, Brisbane, Australia.
Rock Products, Chicago, Illinois.
Safety News, Industrial Accident Commission, San Francisco.
Salt Lake Mining Review, Salt Lake City, Utah.
Southwest Builder and Contractor, Los Angeles.
Standard Oil Bulletin, San Francisco.
Stone, New York.
The Record, Associated Oil Company, San Francisco.

Newspapers.

The following papers are received and kept on file in the library:

Amador Dispatch, Jackson, Cal.
Arkansas Oil and Mineral News, Hot Springs National Park (Arkansas).
Bakersfield Morning Echo, Bakersfield, Cal.
Blythe Herald, Blythe, Cal.
Bridgeport-Chronicle-Union, Bridgeport, Mono Co., Cal.
California Oil World, Los Angeles, Cal.
Colusa Daily Sun, Colusa, Cal.
Daily Commercial News, San Francisco, Cal.
Daily Midway Driller, Taft, Cal.
Del Norte Triplicate, Crescent City, Cal.
Gateway Gazette, Beaumont, Cal.
Goldfield News, Goldfield, Nevada.
Guerneville Times, Guerneville, Cal.
Healdsburg Enterprise, Healdsburg, Cal.
Humboldt Standard, Eureka, Cal.
Inyo Independent, Independence, Cal.
Inyo Register, Bishop, Cal.
Kern County Progress, Shafter, Cal.
Lake County Bee, Lakeport, Cal.
Mariposa Gazette, Mariposa, Cal.
Mining and Financial Record, Denver, Colo.
Mining Topics, Sacramento, Cal., and Unionville, Nev.
Mountain Democrat, Placerville, Cal.
Mountain Messenger, Downieville, Cal.

Nevada Mining Press, Reno, Nevada.
Oatman Mining Press, Oatman, Arizona.
Oregon Observer, Grants Pass, Oregon.
Oroville Daily Register, Oroville, Cal.
Petroleum Reporter, Etna Mills, Cal.
Placer Herald, Auburn, Cal.
Plumas Independent, Quincy, Cal.
Plumas National Bulletin, Quincy, Cal.
San Diego News, San Diego, Cal.
Santa Barbara Daily News, Santa Barbara, Cal.
Shasta Courier, Redding, Cal.
Siskiyou News, Yreka, Cal.
Stockton Record, Stockton, Cal.
Tuolumne Prospector, Tuolumne, Cal.
Ventura Daily Post, Ventura, Cal.
Weekly Trinity Journal, Weaverville, Cal.
Western Sentinel, Etna Mills, Cal.

PRODUCERS AND CONSUMERS.

The producer and consumer of mineral products are mutually dependent upon each other for their prosperity, and one of the most direct aids rendered by the Bureau to the mining industry in the past has been that of bringing producers and consumers into direct touch with each other.

This work has been carried on largely by correspondence, supplemented by personal consultation. Lists of buyers of all the commercial minerals produced in California have been made available to producers upon request, and likewise the owners of undeveloped deposits of various minerals, and producers of them, have been made known to those looking for raw mineral products.

Since the publication of MINING IN CALIFORNIA was begun, current inquiries from buyers and sellers have been summarized and lists of mineral products or deposits 'wanted' or 'for sale' included in each issue.

It is important that inquiries of this nature reach the mining public as soon as possible and in order to avoid the delay incident to their quarterly publication in MINING IN CALIFORNIA, these lists are now issued monthly in the form of a mimeographed sheet under the title of 'Commercial Mineral Notes.'

EMPLOYMENT SERVICE.

Following the establishment of the Mining Division branch offices in 1919, a free technical employment service was offered as a mutual aid to mine operators and technical men for the general benefit of the mineral industry.

Briefly summarized, men desiring positions are registered, the cards containing an outline of the applicant's qualifications, position wanted, salary desired, etc., and as notices of 'positions open' are received, the names and addresses of all applicants deemed qualified are sent to the prospective employer for direct negotiations.

Telephone and telegraphic communications are also given immediate attention.

The Bureau registers technical men, or those qualified for supervisory positions, and vacancies of like nature, only, as no attempt will be made to supply common mine and mill labor.

A list of current applications for positions and 'positions open' is carried in each issue. Notices are designated by a key number, and the name and address corresponding to any number will be supplied upon request, without delay or charge of any kind. If desired, recommendations may be filed with an application, but copies only should be sent to the Bureau, to avoid possible loss. Registration cards for the use of both prospective employers and employees may be obtained at any office of the Bureau upon request, and a cordial invitation is extended to the industry to make free use of the facilities afforded.

POSITIONS WANTED.

21-1 Engineering. Nine years' experience mining, power companies and public works. Can handle office work also. Age 30; married; references; salary wanted, $200.

21-2 Engineering. Mechanical Dept.; four years' experience general construction engineering. Age 30; single; references; salary open.

21-3 Assistant Geologist or Engineer, Oil and Gas. One year's experience; four years in U. S. Army (Regular). Age 32; single; references; salary open.

21-4 Engineering, mining or geological. Two and one-half years' experience. Age 24; single; references; salary open.

21-5 Mine Superintendent or Foreman. Thirteen years' experience. Age 42; widower; references; salary wanted, $200, minimum.

21-6 Superintendent or Foreman of Gravel Mine. Twenty-five years' experience in drift and hydraulic mining. Age 45; married; references; salary wanted, $200.

21-7 Mining Engineer. Technical graduate. Seven years' experience, South Africa, Michigan and Minnesota. Age 30; married; references; salary open.

21-8 Assayer or Analyst. Six and one-half years' experience. Age 30; married; references; salary wanted, $180.

21-9 Assayer or Mill Work. Junior student. Six months' experience. Age 30; married; references; salary open.

21-10 Mining Engineer. Twenty years' experience development, operation and examination of mines. Age 44; married; references; salary open.

21-11 Surgeon for Mining Company. Four years' chief surgeon at copper mine, Arizona. References.

21-12 Consultant on Diatomaceous Earth. Ten years' experience, asbestos and diatomite manufacture. Age 45; married; references.

21-13 Engineer or Superintendent. Thirteen years' general experience. Age 41; married; references; salary wanted, $250.

21-14 Engineer, Superintendent or Manager. Twenty years' general experience. Age 42; married; references; salary open.

21-15 Mine Superintendent and Assayer. Experience covers operation and examination work. Age 48; married; references; salary wanted, $250.

21-16 Draftsman (architectural). Seven and one-half years' experience, including railway construction. Age 30; married; references; salary wanted, $150.

21-17 Hoist Engineer, Electrician, Mechanic, Millman. Sixteen years' varied experience, mainly California and Mexico, in mine, power-house and mill. Age 50; married; excellent references; salary open.

21-18 Mine foreman (coal) or fire boss. Thirty years' experience; thirteen as boss or fire boss. Has fire boss and mine boss certificates. Age 46; single; references; salary open.

PUBLICATIONS OF THE CALIFORNIA STATE MINING BUREAU.

During the past forty-four years, in carrying out the provisions of the organic act creating the California State Mining Bureau, there have been published many reports, bulletins and maps which go to make up a library of detailed information on the mineral industry of the state, a large part of which could not be duplicated from any other source.

One feature that has added to the popularity of the publications is that many of them have been distributed without cost to the public, and even the more elaborate ones have been sold at a price which barely covers the cost of printing.

Owing to the fact that funds for the advancing of the work of this department have often been limited, many of the reports and bulletins mentioned were printed in limited editions which are now entirely exhausted.

Copies of such publications are available, however, in the Bureau's offices in the Ferry Building, San Francisco; Pacific Finance Building, Los Angeles; in Santa Maria; Santa Paula; Coalinga; Taft; Bakersfield, and Sacramento. They may also be found in many public, private and technical libraries in California and other states, and foreign countries.

A catalog of all publications of the Bureau, from 1880 to 1917, giving a synopsis of their contents, is issued as Bulletin No. 77.

Publications in stock may be obtained by addressing any of the offices of the State Mining Bureau and enclosing the requisite amount in the case of publications that have a list price. The Bureau is authorized to receive only coin, stamps or money orders, and it will be appreciated if remittance is made in this manner rather than by personal check.

The prices noted include delivery charges to all parts of the United States. Money orders should be made payable to the State Mining Bureau.

REPORTS.

Asterisks (**) indicate the publication is out of print.

	Price
**First Annual Report of the State Mineralogist, 1880, 43 pp. Henry G. Hanks	----
**Second Annual Report of the State Mineralogist, 1882, 514 pp., 4 illustrations, 1 map. Henry G. Hanks	----
**Third Annual Report of the State Mineralogist, 1883, 111 pp., 21 illustrations. Henry G. Hanks	----
**Fourth Annual Report of the State Mineralogist, 1884, 410 pp., 7 illustrations. Henry G. Hanks	----
**Fifth Annual Report of the State Mineralogist, 1885, 234 pp., 15 illustrations, 1 geological map. Henry G. Hanks	----
**Sixth Annual Report of the State Mineralogist, Part I, 1886, 145 pp., 3 illustrations, 1 map. By Henry G. Hanks	----
**Part II, 1887, 222 pp., 36 illustrations. William Irelan, Jr.	----
**Seventh Annual Report of the State Mineralogist, 1887, 315 pp. William Irelan, Jr.	----
**Eighth Annual Report of the State Mineralogist, 1888, 948 pp., 122 illustrations. William Irelan, Jr.	----
**Ninth Annual Report of the State Mineralogist, 1889, 352 pp., 57 illustrations, 2 maps. William Irelan, Jr.	----
**Tenth Annual Report of the State Mineralogist, 1890, 983 pp., 179 illustrations, 10 maps. William Irelan, Jr.	----
Eleventh Report (First Biennial) of the State Mineralogist, for the two years ending September 15, 1892, 612 pp., 73 illustrations, 4 maps. William Irelan, Jr.	$1.00
**Twelfth Report (Second Biennial) of the State Mineralogist, for the two years ending September 15, 1894, 541 pp., 101 illustrations, 5 maps. J. J. Crawford	----
**Thirteenth Report (Third Biennial) of the State Mineralogist, for the two years ending September 15, 1896, 726 pp., 93 illustrations, 1 map. J. J. Crawford	----
Chapters of the State Mineralogist's Report, Biennial Period, 1913–1914, Fletcher Hamilton:	
**Mines and Mineral Resources, Amador, Calaveras and Tuolumne Counties, 172 pp., paper	----
Mines and Mineral Resources, Colusa, Glenn, Lake, Marin, Napa, Solano, Sonoma and Yolo Counties, 208 pp., paper	.50
Mines and Mineral Resources, Del Norte, Humboldt, and Mendocino Counties, 59 pp., paper	.25
Mines and Mineral Resources, Fresno, Kern, Kings, Madera, Mariposa, Merced, San Joaquin and Stanislaus Counties, 220 pp., paper	.50
Mines and Mineral Resources of Imperial and San Diego Counties, 113 pp., paper	.35
**Mines and Mineral Resources, Shasta, Siskiyou and Trinity Counties, 180 pp., paper	----
Fourteenth Report of the State Mineralogist, for the Biennial Period 1913–1914, Fletcher Hamilton, 1915:	
A General Report on the Mines and Mineral Resources of Amador, Calaveras, Tuolumne, Colusa, Glenn, Lake, Marin, Napa, Solano, Sonoma, Yolo, Del Norte, Humboldt, Mendocino, Fresno, Kern, Kings, Madera, Mariposa, Merced, San Joaquin, Stanislaus, San Diego, Imperial, Shasta, Siskiyou, and Trinity Counties, 974 pp., 275 illustrations, cloth	2.00
Chapters of the State Mineralogist's Report, Biennial Period, 1915–1916, Fletcher Hamilton:	
Mines and Mineral Resources, Alpine, Inyo and Mono Counties, 176 pp., paper	.65
Same, including geological map of Inyo County	1.25
Mines and Mineral Resources, Butte, Lassen, Modoc, Sutter, and Tehama Counties, 91 pp., paper	.50
Mines and Mineral Resources, El Dorado, Placer, Sacramento, and Yuba Counties, 198 pp., paper	.65

REPORTS—Continued.

Asterisks (**) indicate the publication is out of print.

	Price
Mines and Mineral Resources, Los Angeles, Orange, and Riverside Counties, 136 pp., paper	$0.50
Mines and Mineral Resources, Monterey, San Benito, San Luis Obispo, Santa Barbara, and Ventura Counties, 183 pp., paper	.65
Mines and Mineral Resources, San Bernardino and Tulare Counties, 186 pp., paper	.65
Fifteenth Report of the State Mineralogist, for the Biennial Period 1915–1916, Fletcher Hamilton, 1917:	
A general Report on the Mines and Mineral Resources of Alpine, Inyo, Mono, Butte, Lassen, Modoc, Sutter, Tehama, Placer, Sacramento, Yuba, Los Angeles, Orange, Riverside, San Benito, San Luis Obispo, Santa Barbara, Ventura, San Bernardino and Tulare Counties, 990 pp., 413 illustrations, cloth	3.75
Chapters of the State Mineralogist's Report, Biennial Period 1917–1918, Fletcher Hamilton:	
Mines and Mineral Resources of Nevada County, 270 pp., paper	.75
Mines and Mineral Resources of Plumas County, 188 pp., paper	.50
Mines and Mineral Resources of Sierra County, 144 pp., paper	.50
Seventeenth Report of the State Mineralogist, 1920, Mining in California During 1920, Fletcher Hamilton; 562 pp., 71 illustrations, cloth	1.75
Eighteenth Report of the State Mineralogist, 1922, Mining in California, Fletcher Hamilton. Chapters published monthly beginning with January, 1922:	
**January, **February, March, April, May, June, July, August, September, October, November, December, 1922	Free
Nineteenth Report of the State Mineralogist, 1923, Mining in California, Fletcher Hamilton; Lloyd L. Root. Chapters published monthly January to March, 1923, quarterly beginning with September, 1923. January, February, March, September, 1923	Free
Twentieth Report of the State Mineralogist, Mining in California. Lloyd L. Root, January, 1924	.25
Chapters of State Oil and Gas Supervisor's Report:	
Summary of Operations—California Oil Fields, July, 1918, to March, 1919 (one volume)	Free
Summary of Operations—California Oil Fields. Published monthly, beginning April, 1919:	
**April, **May, June, **July, **August, **September, **October, November, **December, 1919	Free
January, February, March, April, **May, June, July, **August, September, October, November, December, 1920	Free
January, **February, **March, **April, May, June, **July, August, **September, **October, **November, **December, 1921	Free
January, February, **March, April, May, June, July, August, September, October, November, December, 1922	Free
January, February, **March, April, May, June, July, August, September, October, 1923	Free

BULLETINS.

Asterisks (**) indicate the publication is out of print.

	Price
**Bulletin No. 1. A Description of Some Desiccated Human Remains, by Winslow Anderson. 1888, 41 pp., 6 illustrations	----
**Bulletin No. 2. Methods of Mine Timbering, by W. H. Storms. 1894, 58 pp., 75 illustrations	----
**Bulletin No. 3. Gas and Petroleum Yielding Formations of Central Valley of California, by W. L. Watts. 1894, 100 pp., 13 illustrations, 4 maps	----
**Bulletin No. 4. Catalogue of Californian Fossils, by J. G. Cooper, 1894, 73 pp., 67 illustrations. (Part I was published in the Seventh Annual Report of the State Mineralogist, 1887.)	----
**Bulletin No. 5. The Cyanide Process, 1894, by Dr. A. Scheidel. 140 pp., 46 illustrations	----

BULLETINS—Continued.

Asterisks (**) indicate the publication is out of print.

	Price
Bulletin No. 6. California Gold Mill Practices, 1895, by E. B. Preston, 85 pp., 46 illustrations	$0.50
**Bulletin No. 7. Mineral Production of California, by Counties for the year 1894, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 8. Mineral Production of California, by Counties for the year 1895, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 9. Mine Drainage, Pumps, etc., by Hans C. Behr. 1896, 210 pp., 206 illustrations	----
**Bulletin No. 10. A bibliography Relating to the Geology, Palæntology and Mineral Resources of California, by Anthony W. Vogdes. 1896, 121 pp.	----
**Bulletin No. 11. Oil and Gas Yielding Formations of Los Angeles, Ventura and Santa Barbara counties, by W. L. Watts. 1897, 94 pp., 6 maps, 31 illustrations	----
**Bulletin No. 12. Mineral Production of California, by Counties for 1896, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 13. Mineral Production of California, by Counties for 1897, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 14. Mineral Production of California, by Counties for 1898, by Charles G. Yale	----
**Bulletin No. 15. Map of Oil City Fields, Fresno County, by John H. Means. 1899	----
**Bulletin No. 16. The Genesis of Petroleum and Asphaltum in California, by A. S. Cooper. 1899, 39 pp., 29 illustrations	----
**Bulletin No. 17. Mineral Production of California, by Counties for 1899, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 18. Mother Lode Region of California, by W. H. Storms. 1900, 154 pp., 49 illustrations	----
**Bulletin No. 19. Oil and Gas Yielding Formations of California, by W. L. Watts. 1900, 236 pp., 60 illustrations, 8 maps	----
**Bulletin No. 20. Synopsis of General Report of State Mining Bureau, by W. L. Watts. 1901, 21 pp. This bulletin contains a brief statement of the progress of the mineral industry in California for the four years ending December, 1899	----
**Bulletin No. 21. Mineral Production of California by Counties, by Charles G. Yale. 1900. Tabulated sheet	----
**Bulletin No. 22. Mineral Production of California for Fourteen Years, by Charles G. Yale. 1900. Tabulated sheet	----
Bulletin No. 23. The Copper Resources of California, by P. C. DuBois, F. M. Anderson, J. H. Tibbits and G. A. Tweedy. 1902, 282 pp., 69 illustrations, and 9 maps	.50
**Bulletin No. 24. The Saline Deposits of California, by G. E. Bailey. 1902, 216 pp., 99 illustrations, 5 maps	----
**Bulletin No. 25. Mineral Production of California, by Counties, for 1901, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 26. Mineral Production of California for the past Fifteen Years, by Charles G. Yale. 1902. Tabulated sheet	----
**Bulletin No. 27. The Quicksilver Resources of California, by William Forstner. 1903, 273 pp., 144 illustrations, 8 maps	----
**Bulletin No. 28. Mineral Production of California, for 1902, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 29. Mineral Production of California for Sixteen Years, by Charles G. Yale. 1903. Tabulated sheet	----
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**Bulletin No. 32. Production and Use of Petroleum in California, by Paul W. Prutzman. 1904, 230 pp., 116 illustrations, 14 maps	----
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Bulletin No. 37. Gems, Jewelers' Materials, and Ornamental Stones of California, by George F. Kuntz. 1905, 168 pp., 54 illustrations	$0.25
**Bulletin No. 38. Structural and Industrial Materials of California, by Wm. Forstner, T. C. Hopkins, C. Naramore and L. H. Eddy. 1906, 412 pp., 150 illustrations, 1 map	----
**Bulletin No. 39. Mineral Production of California, by Counties, for 1904, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 40. Mineral Production of California for Eighteen Years, by Charles G. Yale. 1905. Tabulated sheet	----
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Bulletin No. 50. The Copper Resources of California, 1908, by A. Hausmann, J. Kruttschnitt, Jr., W. E. Thorne and J. A. Edman, 366 pp., 74 illustrations. (Revised edition.)	1.00
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**Bulletin No. 53. Mineral Production of California for 1907, with County Maps, by D. H. Walker, 62 pp.	----
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**Bulletin No. 67. Minerals of California, by Arthur S. Eakle. 1914, 226 pp.	----
**Bulletin No. 68. Mineral Production for 1913, with County Maps and Mining Laws, by E. S. Boalich. 160 pp.	----
**Bulletin No. 69. Petroleum Industry of California, with Folio of Maps (18 by 22), by R. P. McLaughlin and C. A. Waring. 1914, 519 pp., 13 illustrations, 83 figs. [18 plates in accompanying folio.]	----
**Bulletin No. 70. Mineral Production for 1914, with County Maps and Mining Laws. 184 pp.	----
**Bulletin No. 71. Mineral Production for 1915, with County Maps and Mining Laws, by Walter W. Bradley. 193 pp., 4 illustrations	----
Bulletin No. 72. The Geologic Formations of California, by James Perrin Smith. 1916, 47 pp.	$0.25
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**Bulletin No. 73. First Annual Report of the State Oil and Gas Supervisor of California, for the fiscal year 1915–16, by R. P. McLaughlin. 278 pp., 26 illustrations	----
Bulletin No. 74. Mineral Production of California in 1916, with County Maps, by Walter W. Bradley. 179 pp., 12 illustrations	Free
**Bulletin No. 75. United States and California Mining Laws, 1917. 115 pp., paper	----
Bulletin No. 76. Manganese and Chromium in California, by Walter W. Bradley, Emile Huguenin, C. A. Logan, W. B. Tucker and C. A. Waring, 1918. 248 pp., 51 illustrations, 5 maps, paper	.50
Bulletin No. 77. Catalogue of Publications of California State Mining Bureau, 1880–1917, by E. S. Boalich. 44 pp., paper	Free
Bulletin No. 78. Quicksilver Resources of California, with a Section on Metallurgy and Ore-Dressing, by Walter W. Bradley, 1918. 389 pp., 77 photographs and 42 plates (colored and line cuts), cloth	1.50
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Bulletin No. 89. Petroleum Resources of California, with Special Reference to Unproved Areas, by Lawrence Vander Leck, 1921. 12 figures, 6 photographs, 6 maps in pocket, 186 pp., cloth	1.25
Bulletin No. 90. California Mineral Production for 1920, with County Maps, by Walter W. Bradley, 1921. 218 pp., paper	Free
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Bulletin No. 93. California Mineral Production for 1922, by Walter W. Bradley, 1923	Free

PRELIMINARY REPORTS.

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**Preliminary Report No. 2. Notes on Damage by Water in California Oil Fields, March, 1914. By R. P. McLaughlin. 4 pp.	----
**Preliminary Report No. 3. Manganese and Chromium, 1917. By E. S. Boalich. 32 pp.	----
Preliminary Report No. 4. Tungsten, Molybdenum and Vanadium. By E. S. Boalich and W. O. Castello, 1918. 34 pp. Paper	Free
Preliminary Report No. 5. Antimony, Graphite, Nickel, Potash, Strontium and Tin. By E. S. Boalich and W. O. Castello, 1918. 44 pp. Paper	Free
Preliminary Report No. 6. A Review of Mining in California During 1919. Fletcher Hamilton, 1920. 43 pp. Paper	Free
**Preliminary Report No. 7. The Clay Industry in California. By E. S. Boalich, W. O. Castello, E. Huguenin, C. A. Logan, and W. B. Tucker, 1920. 102 pp. 24 illustrations. Paper	----
**Preliminary Report No. 8. A Review of Mining in California During 1921, with Notes on the Outlook for 1922. Fletcher Hamilton, 1922. 68 pp. Paper	----

MISCELLANEOUS PUBLICATIONS.

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**First Annual Catalogue of the State Museum of California, being the collection made by the State Mining Bureau during the year ending April 16, 1881. 350 pp.	----
**Catalogue of books, maps, lithographs, photographs, etc., in the library of the State Mining Bureau at San Francisco, May 15, 1884. 19 pp.	----
**Catalogue of the State Museum of California, Volume II, being the collection made by the State Mining Bureau from April 16, 1881, to May 5, 1884. 220 pp.	----
**Catalogue of the State Museum of California, Volume III, being the collection made by the State Mining Bureau from May 15, 1884, to March 31, 1887. 195 pp.	----
**Catalogue of the State Museum of California, Volume IV, being the collection made by the State Mining Bureau from March 30, 1887, to August 20, 1890. 261 pp.	----
**Catalogue of the Library of the California State Mining Bureau, September 1, 1892. 149 pp.	----
**Catalogue of West North American and Many Foreign Shells with Their Geographical Ranges, by J. G. Cooper. Printed for the State Mining Bureau, April, 1894	----
**Report of the Board of Trustees for the four years ending September, 1900. 15 pp. Paper	----
Bulletin. Reconnaissance of the Colorado Desert Mining District. By Stephen Bowers, 1901. 19 pp. 2 illustrations. Paper	Free
Commercial Mineral Notes. A monthly mimeographed sheet. April, May, June, July, August, September, October, November, December, 1923	Free
January, February, 1924	Free

MAPS.

Registers of Mines With Maps.

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Register of Mines, with Map, Amador County	$0.25
Register of Mines, with Map, Butte County	.25
**Register of Mines, with Map, Calaveras County	----
**Register of Mines, with Map, El Dorado County	----
**Register of Mines, with Map, Inyo County	----
**Register of Mines, with Map, Kern County	----
**Register of Mines, with Map, Lake County	----
**Register of Mines, with Map, Mariposa County	----
**Register of Mines, with Map, Nevada County	----
**Register of Mines, with Map, Placer County	----
**Register of Mines, with Map, Plumas County	----
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**Register of Mines, with Map, Sierra County	----
**Register of Mines, with Map, Siskiyou County	----
**Register of Mines, with Map, Trinity County	----
**Register of Mines, with Map, Tuolumne County	----
Register of Mines, with Map, Yuba County	.25
Register of Oil Wells, with Map, Los Angeles City	----

OTHER MAPS.

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Map of California, Showing Mineral Deposits (50 x 60 in.)—	
**Mounted	----
**Unmounted	----
Map of Forest Reserves in California—	
Mounted	.50
**Unmounted	----
**Mineral and Relief Map of California	----
**Map of El Dorado County, Showing Boundaries, National Forests	----
**Map of Madera County, Showing Boundaries, National Forests	----
**Map of Placer County, Showing Boundaries, National Forests	----
**Map of Shasta County, Showing Boundaries, National Forests	----
**Map of Sierra County, Showing Boundaries, National Forests	----
**Map of Siskiyou County, Showing Boundaries, National Forests	----
**Map of Tuolumne County, Showing Boundaries, National Forests	----
**Map of Mother Lode Region	----
**Map of Desert Region of Southern California	----
Map of Minaret District, Madera County	.20
Map of Copper Deposits in California	.05
**Map of Calaveras County	----
Map of Plumas County	.25
**Map of Trinity County	----
Map of Tuolumne County	.25
Geological Map of Inyo County. Scale 1 inch equals 4 miles	.60
Map of California accompanying Bulletin No. 89, showing generalized classification of land with regard to oil possibilities. Map only, without Bulletin	.25
Geological Map of California, 1916. Scale 1 inch equals 12 miles. As accurate and up-to-date as available data will permit as regards topography and geography. Shows railroads, highways, post offices and other towns. First geological map that has been available since 1892, and shows geology of entire state as no other map does. Geological details lithographed in 23 colors. Mounted	2.50

OIL FIELD MAPS.

These maps are revised from time to time as development work advances and ownerships change.

	Price
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Map No. 3—Santa Maria, including Casmalia and Lompoc	.75
Map No. 4—Whittier-Fullerton, including Olinda, Brea Canyon, Puente Hills, East Coyote and Richfield	.75
Map No. 5—Whittier-Fullerton, including Whittier, West Coyote, and Montebello	.75
Map No. 6—Salt Lake, Los Angeles County	.75
Map No. 7—Sunset and San Emido and Kern County	.75
Map No. 8—South Midway and Buena Vista Hills, Kern County	.75
Map No. 9—North Midway and McKittrick, Kern County	.75
Map No. 10—Belridge and McKittrick, Kern County	.75
Map No. 11—Lost Hills and North Belridge, Kern County	.75
Map No. 12—Devils Den, Kern County	.75
Map No. 13—Kern River, Kern County	.75
Map No. 14—Coalinga, Fresno County	.75
Map No. 15—Elk Hills, Kern County	.75
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Map No. 17—Santa Paula-Sespe Oil Fields, Ventura County	.75
Map No. 18—Piru-Simi-Newhall Oil Fields	.75
Map No. 19—Arroyo Grande, San Luis Obispo County	.75
Map No. 20—Long Beach Oil Field	1.00
Map No. 21—Portion of District 4, Showing Boundaries of Oil Fields, Kern and Kings counties	.75
Map No. 22—Portion of District 3, Showing Oil Fields, Santa Barbara County	.75
Map No. 23—Portion of District 2, Showing Boundaries of Oil Fields, Ventura County	.75
Map No. 24—Portion of District 1, Showing Boundaries of Oil Fields, Los Angeles and Orange counties	.75
Map No. 25—Kern River Oil Field	.75
Map No. 26—Huntington Beach Oil Field	.75
Map No. 27—Santa Fe Springs Oil Field	.75
Map No. 28—Torrance, Los Angeles County	.75

DETERMINATION OF MINERAL SAMPLES.

Samples (limited to three at one time) of any mineral found in the state may be sent to the Bureau for identification, and the same will be classified free of charge. No samples will be determined if received from points outside the state. It must be understood that no assays, or quantitative determinations will be made. Samples should be in lump form if possible, and marked plainly with name of sender on outside of package, etc. No samples will be received unless delivery charges are prepaid. A letter should accompany sample, giving locality where mineral was found and the nature of the information desired.

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THE STATE MINING BUREAU

CORDIALLY INVITES YOU TO VISIT
ITS VARIOUS DEPARTMENTS MAINTAINED
FOR THE PURPOSE OF FURTHERING
THE DEVELOPMENT OF THE

MINERAL RESOURCES OF CALIFORNIA

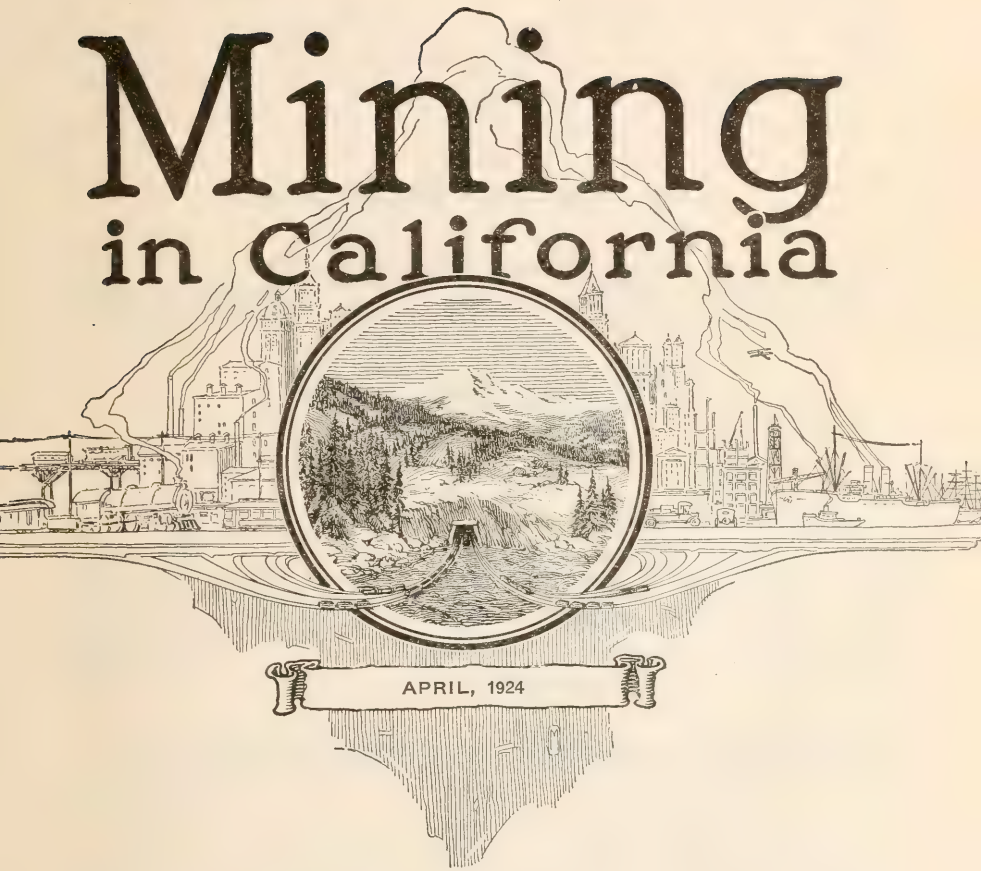
At the service of the public are the scientific reference library and reading room, the general information bureau, the laboratory for the free determination of mineral samples found in the state, and the largest museum of mineral specimens on the Pacific Coast. The time and attention of the State Mineralogist, as well as that of his technical staff, is also at your disposal.

Office hours: 9 a.m. to 5 p.m. daily.
Saturday, 9 a.m. to 12 m.

LLOYD L. ROOT,
State Mineralogist.

Third floor, Ferry Building, San Francisco, Cal.
Branch Offices: Pacific Finance Building, Los Angeles; Sacramento, Bakersfield, Taft, Coalinga, Santa Maria, and Santa Paula.

Mining in California



APRIL, 1924

PUBLISHED QUARTERLY

CALIFORNIA STATE
MINING BUREAU

FERRY BUILDING
SAN FRANCISCO

32215

CALIFORNIA STATE MINING BUREAU.

EXECUTIVE AND TECHNICAL STAFF

LLOYD L. ROOT
State Mineralogist

WALTER W. BRADLEY
Deputy State Mineralogist

MINING DIVISION

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C. McK. LAIZURE, District Mining Engineer	San Francisco
W. BURLING TUCKER, District Mining Engineer	Los Angeles
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C. D. HULIN, Geologist	San Francisco
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DEPARTMENT OF PETROLEUM AND GAS

R. D. BUSH, State Oil and Gas Supervisor	San Francisco

NOTE.—A detailed report of the activities of the Department of Petroleum and Gas is issued monthly by the State Mining Bureau, entitled 'Summary of Operations, California Oil Fields.'

CALIFORNIA STATE MINING BUREAU
FERRY BUILDING, SAN FRANCISCO

LLOYD L. ROOT State Mineralogist

Vol. 20 APRIL, 1924 No. 2

CHAPTER OF

REPORT XX OF THE STATE MINERALOGIST

COVERING

MINING IN CALIFORNIA

AND THE

ACTIVITIES OF THE STATE MINING BUREAU

CALIFORNIA STATE PRINTING OFFICE
FRANK J. SMITH, Superintendent
SACRAMENTO, 1924

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CALIFORNIA STATE MINING BUREAU
LLOYD L. ROOT
STATE MINERALOGIST
OUTLINE MAP
OF
CALIFORNIA
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OREGON
NEVADA
PACIFIC OCEAN
MEXICO
SISKIYOU
MODOC
SHASTA
LASSEN
TRINITY
TEHAMA
PLUMAS
GLENN
BUTTE
SIERRA
MENDOCINO
LAKE
COLUSA
NEVADA
PLACER
YOLO
EL DORADO
SONOMA
NAPA
AMADOR
ALPINE
MONO
SOLANO
TUOLUMNE
SAN JOAQUIN
CONTRA COSTA
SAN FRANCISCO
ALAMEDA
STANISLAUS
MARIPOSA
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SANTA CLARA
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INYO
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FRESNO
MONTEREY
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KINGS
SAN LUIS OBISPO
KERN
SAN BERNARDINO
SANTA BARBARA
VENTURA
LOS ANGELES
ORANGE
RIVERSIDE
IMPERIAL
SAN DIEGO
- LEGEND -
Mining Division Boundaries.
Mining Division Offices.

PREFACE.

The State Mining Bureau is maintained for the purpose of assisting in all possible ways in the development of California's mineral resources.

As one means of offering tangible service to the mining public, the State Mineralogist for many years has issued an annual or a biennial report reviewing in detail the mines and mineral deposits of the various counties.

The weak point in work of this character has been that the results of field investigations were so long in preparation that they had lost much of their usefulness by the time they finally appeared in print.

As a progressive step in advancing the interests of the mineral industry, publication of the Annual Report of the State Mineralogist in the form of monthly chapters was begun in January, 1922, and continued until March, 1923.

Owing to a lack of funds for printing, quarterly publication was begun in September, 1923.

For the same reason, beginning with the January, 1924, issue, it has been necessary to charge a subscription price of $1 per calendar year, payable in advance; single copies, 25 cents apiece. 'Mining in California' will continue to be sent without charge to our exchange list, including schools and public libraries, as are also other publications of the State Mining Bureau.

Pages are numbered consecutively throughout the year and an index to the complete reports is included annually in the closing number.

Such a publication admits of several improvements over the old method of procedure. Each issue contains a report of the current development and mining activities of the state, prepared by the district mining engineers. Special articles dealing with various phases of mining and allied subjects by members of the staff and other contributors are included. Mineral production reports formerly issued only as an annual statistical bulletin are published herein as soon as returns from producers are compiled. The executive activities, and those of the laboratory, museum, library, employment service and other features with which the public has had too little acquaintance also are reported.

While current activities of all descriptions will be covered in these chapters, the Bureau will not discontinue its practice of issuing from time to time technical reports on special subjects. A list of such reports now available is appended hereto, and the names of new bulletins will be added in the future as they are completed.

The chapters will be subject to revision, correction and improvement. Constructive suggestions from the mining public will be gladly received, and are invited.

The one aim of the Mining Bureau is to increase its usefulness and to stimulate the intelligent development of the wonderful, latent resources of the State of California.

DISTRICT REPORTS OF MINING ENGINEERS.

In 1919–1920 the Mining Department was organized into four main geographical divisions, with the field work delegated to a mining engineer in each district working out from field offices that were established in Redding, Auburn, San Francisco and Los Angeles, respectively.

This move brought the Bureau into closer personal contact with operators, and it has many advantages over former methods of conducting field work.

To continue this system most effectively with the limited funds available for the present biennium, the Redding and Auburn field offices were consolidated and moved to Sacramento on June 1, 1923.

The boundaries of each district were adjusted and the counties now included in each of the three divisions, and the locations of the branch offices, are shown on the accompanying outline map of the state. (Frontispiece.)

Reports of mining activities and development in each division, prepared by the district engineer, will continue to appear under the proper field division heading.

Although the petroleum industry is but little affiliated with other branches of mining, oil and gas are among the most valuable mineral products of California, and a report by the State Oil and Gas Supervisor on the current development and general conditions in the state's oil fields is included under this heading.

SACRAMENTO FIELD DIVISION.

C. A. Logan, Mining Engineer.

Amador County.

A. L. Chappell is in charge of work at the *Cleveland Consolidated Gravel Mine* near Volcano. A new prospect shaft had reached a depth of about 60 feet by the middle of March. The mine has been a producer.

Elephant Hydraulic Mine near Volcano was prepared for operation in the fall with three giants placed and three ditches ready to deliver water, but it had been impossible to do any work up to the middle of March on account of shortage of water. Grillo Brothers and John Baroni are the lessees.

Ludekins Hydraulic Mine, beside the highway between Volcano and Barnhart station, has been able to operate with one giant in a small way, two men being employed.

Marklee Mining Company, 105 Federal Realty Building, Oakland, Cal. This company had cleaned out the first 230 feet of the old main shaft of the *Marklee Mine* and had done a good deal of work on the surface up to the middle of March, at which time they had suspended work. It is reported that over $18,000 had been spent.

The main shaft, in which the rich shoot of early days was found, is about 500 feet deep. The strike of the vein is north of west and the oreshoot is said to have raked away from the shaft, necessitating longer drives on each succeeding level. The mine was discovered in 1868 and, according to a report by the original owners in 1869, was 100 feet deep

the autumn of that year and was producing ore of an assay value of $60 a ton, from which only $30 a ton was recovered, on account of lack of facilities for saving sulphides. While the lapse of time has been so great that definite details are hard to get, it seems certain that the main oreshoot was quite short and that the bottom level had not been run far enough to prove the shoot, although a body of $4 ore is said to have been found on that level. Besides the main shaft, a drift was run from near the shaft collar for about 800 feet along the vein, and three winzes were sunk to depths of 350, 100 and 140 feet respectively. There is said to be about 200 feet of blank ground on the vein between the two oreshoots, the second of which is said to have been penetrated by the farthermost winze, and is said to be about a foot wide. The mine is about five miles from Volcano. It is equipped with a 10-stamp mill, boiler and steam engines and small lumber sawing plant.

Moore Mine. Moore Mining Company, main office 923 Balboa Building, San Francisco. The 800 station had just been finished and drifting for the shoot had begun on March 13th. The oreshoot was reported 300 feet long on the 640 level and was stoped for an average width of nine or ten feet. There was a sharp bend in the shoot where it was worked 16 feet wide. This level has been about worked out.

According to a statement issued to stockholders on February 19, the total cost of the plant to that date had been $106,502.86. The mill building and machinery (20 stamps with concentrators) cost $50,584.41; hoist $6,996; tailing dam $6,672, and miscellaneous plant items $19,147.83. A total of $61,740 has been paid on account of purchase of property.

During January and February, 1924, only ten stamps of the mill were operated and averaged 46 tons each twenty-four hours. For this two months period the gross production was $20,243.83. The average recovery in February was 80 per cent. During 1923 a great deal of trouble was experienced in making the actual recovery from the mill check anywhere near the indicated recovery. For December, actual recovery was said to have been $7,252 less than indicated recovery, for November $1,590 less, for October $4,002 less and so on, in spite of all possible precautions in sampling and assaying. The ore is said to carry orpiment, and this mineral and galena are said to be causing the principal loss in the slimes.

Old Eureka Mine at Sutter Creek was reported sold the middle of April to the Central Eureka Mining Company. The Central Eureka Company had lately been mining good ore on and near their north end line, and the sale, if made, will set at rest any speculations about possible litigation.

Pitts Mine (Mountain King and Mountain Queen) is nine miles by road from Jackson, and adjoining the village of Pine Grove, in section 4, T. 6 N., R. 12 E., containing 110 acres in all. Owners are W. B. Pitts and Mrs. Louise Pitts. A lease and option to purchase is held by A. M. Locey, W. L. Erwin, Mrs. Alva Archer and H. C. Kennedy.

There are two series of veins and rich ore has been found near their intersections. On an easterly striking vein a shaft has been sunk 265

feet with a level at 250 feet but there is no record of production from it though some good prospects were reported in sinking. About 150 feet north of this, a northerly striking vein comes in from the south up to the first fissure, and the Anaconda shaft was sunk 125 feet on this second vein near the intersection. This vein is said to have yielded a good gold production under romantic circumstances, but there is no written record. A tunnel was run from the creek 70 feet lower than the shaft collar, northward for several hundred feet with two forks and high-grade ore was found in both directions, on the north in a winze that has been started lately by the lessees and in an old raise put up by other operators. The veins in this part of the property range from one to six feet wide. Another vein, 250 feet north of the deeper shaft, appears to cut off the east striking vein. The operators are prospecting the tunnel workings and plan to put up a five-stamp mill, believing they have considerable ore available. There are other veins on the property that have not been developed. The geological indications in the tunnel workings are promising, but it is evident that most of the work done heretofore has been in search of pockets and no attempt has been made to develop milling ore. The richer ore shows gold in galena.

In the Defender District, which is opposite the West Point District of Calaveras County, little work is going on. The two are a unit geologically.

Amador Columbus Mine is opposite the Columbus Mine and supposed to be an extension of it. Frank de Bois is sinking a prospect shaft and is down about 40 feet.

R. C. Reed of Volcano has leased the *Defender Mine* from the owner, J. B. Stapler of West Point. Reed has been working alone and has driven about 50 feet of tunnel and has sunk 50 feet of winze on what is called the west ledge. The quartz in this winze is about 6 feet wide, with hard walls and no gouge, the footwall being poorly defined. What appears to be a dike has been slightly exposed on the hanging wall. A few tons of ore milled from this winze is reported to have yielded very satisfactorily.

The Defender vein is the middle one of three veins and the only one on which much has been done previous to Reed's work. There is reported to be in the bottom workings, 480 feet deep, a body of ore very heavy with pyrite, that carries $10 to $12 a ton and offers a treatment problem as the sulphide content is already too high to make concentration feasible. The ore was very good to a depth of 360 feet.

Piney Creek Mine, a mile northeast of Barnhart station, is being operated by Frank Shafter, who is installing a roller mill.

Sunset Mine. John J. Ratto of Sutter Creek and C. R. Daggett of Ione have been producing some very good ore from the 300-foot level of this mine, which is a mile and a half west of Martel.

The deposit of red marble on the *Wait Ranch*, near Plymouth, is being prospected by the California Slimes Company, W. E. Darrow, president. This deposit shows an outcrop 160 feet by 400 feet, as mentioned in our 1923 report, but has not been previously prospected.

Calaveras County.

Columbus Mine was productive in 1922 and 1923 and was sold by W. W. Gibson after he realized a good profit from ore milled.

Forest Creek Mining Company. Richard Hedrich, Jr., general manager, West Point. This property is six miles from West Point and has been prospected for several years past. It is at present being equipped with considerable machinery.

Lone Star Mine. J. B. Stapler and Company, West Point. This property was productive during 1923, the ore reported as coming from a winze below the 'minus 200' level. A small mill was in operation.

Porteous Group of claims on the Licking Fork above West Point is being developed by Frank Becker. Ninety feet of new tunnel has been run recently by Becker with four men employed. Water from the Licking Fork is used to develop power for the compressor.

Woodhouse Mine is being reopened by W. W. Gibson. It is in the West Point District.

Lamphear Mine, south of Mokelumne Hill, is the basis of a new company called the Lamphear Mining Company, with an office at Mokelumne Hill. Myron D. Greve, Mokelumne Hill, is secretary of the company. The capitalization is 200,000 shares at fifteen cents each.

The Lamphear Mine was worked as early as 1867, when it had an 8-stamp mill as stated by J. Ross Browne in a report written in 1868, at which time a depth of 45 feet had been reached. According to a map by J. Robert Wylie there are two shafts on the property, the deeper about 300 feet deep with levels at 100, 180 and 280 feet, and the other 100 feet deep. The two were connected on the 100 level and the 180 level is run nearly to the second shaft which is 200 feet southeast of the first. The 280 level was drifted about 90 feet. The vein has been stoped from the 180 level to the surface. It strikes northwest and dips northeast and is reported four to eight feet wide, including gouge. While no rich assays are being claimed, the promoters of the company believe the geological conditions favorable. The mine has been unwatered and some work is being done.

Activity has continued at the *Apex Mine* (Ford) at San Andreas, where the levels below the 100 level were being unwatered at last report.

Prosperity Mine, J. Robt. Wylie, manager, is being prepared to start milling some ore. Wylie reports very encouraging assays.

COPPER.

Calaveras Copper Company. Eastern office, Oliver Ames, president, Ames Building, Boston, Mass.; C. H. Tyler, managing director and secretary; S. M. Levy, general manager, Copperopolis, Cal. The mine, concentrator and smelting plant are at Copperopolis. The extent of the property and notes on the past operations are shown in Report XIII of the State Mineralogist. The mines now consolidated under this company are among the oldest copper producers in the state, the Union, Empire and Keystone claims having been opened in 1861. Between

1861 and 1869 the properties have a record of having shipped 125,739 tons of ore assaying 10 per cent copper or better, the Union and Keystone having been during that period the principal copper producers of the state. They were closed down from 1869 to 1887, in which year underground work was resumed and continued until 1892, a 100-ton smelting furnace having been put up in 1889. The Calaveras Copper Company operated from 1909 to 1913, then again during the war period, after which the property has been under development and improvement in a small way, awaiting an increase in the price of copper, until the past year when mining and smelting were resumed. During 1923 the production was 1,436,326 pounds of copper and only 1464 ounces of silver, with no gold.

The property is being worked now through the Discovery or Keystone shaft, the collar of which is 984 feet above sea level. This shaft is 1150 feet deep on the dip of vein, which averages 61 degrees. The Union shaft is 1500 feet south of it and still further south is the South shaft, 500 feet deep, which has a hoist and is available as a second exit, being connected with the old eighth level of Discovery shaft. Former operations were through the Union shaft. At present, work is going on from the three lowest levels of Keystone shaft, No. 11 level being open 1160 feet south, No. 12 level 850 feet south and the 1350 level 650 feet south. At the time of visit (February 20) ore was being stoped from the 1100 and 1350-foot levels.

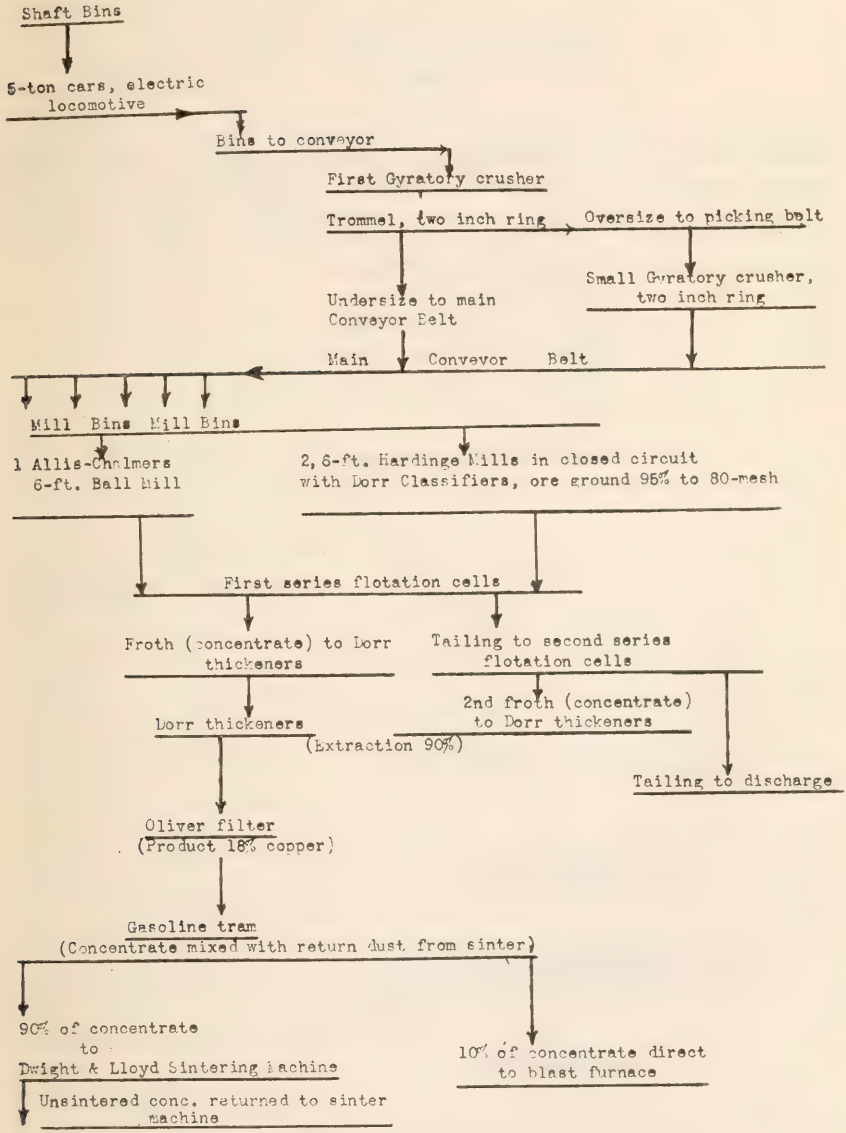
The main orebody is reported 600 feet long with an average width of 15 feet. On the 1350 level they also have a footwall orebody about 200 feet long and ten feet wide, not cut previously on the other levels and which later may be found to connect with the main body, though now distinct. The orebody is worked out above the ninth level which is about 450 feet on dip above 1350 level. The ore lies in lenses, with only an occasional break on the dip, but overlapping on the strike. The flat slips have a maximum throw of 40 feet. The ore is chalcopyrite with more or less pyrite, and is deposited typically along seams in black Mariposa slate, along the direction of strike of the bedding planes of the slate, or northwest. On the footwall of the slate is serpentine with lenses of talc. On the hanging wall on the 1350 level is a grey-green amphibolite schist, although the hanging wall is stated to have been meta-diabase in the upper levels, the gradation between the two probably being gradual. On the 1350 level where noted, the separation between the grey schist and the black slate appears gradual and indistinct, and sulphides occur in both. A granodiorite dike is reported to come up in the slate in the form of a lens, with a maximum thickness of 40 to 50 feet, and smaller dikes have been noted. The ore is reported now to be averaging about 4 per cent copper, carries no gold as far as smelter returns show, and very little silver. The main dike carries at times as much as 1½ per cent copper. Stopes are filled and little timber is used except for chutes and drifts. In the drifts, when near serpentine, large caps are soon buckled by the heavy side pressure, while the posts take little weight. Some bunches of very rich ore are encountered, composed of chalcopyrite carrying up to 20 per cent copper, and the other copper minerals are notably lacking, the deposit being different in this respect and in the lack of precious metals from any others now or recently operated in the state.

Two hundred men were employed in February, of whom 77 were working underground and producing about 200 tons of ore daily. An extra force on the surface was employed in putting up a new reverberatory furnace. The sinter plant and concentrating plant were being worked two shifts and the 200-ton blast furnace one shift. The mill and sinter plant have a capacity of about 400 tons of 4 per cent ore a day. A new reverberatory furnace being built will replace the blast furnace for smelting concentrate and the latter will then be used for smelting high-grade ore, containing 10 per cent copper or better, some of the ore being of such high grade that it would serve no purpose to put it through the concentrator. Blister copper and matte are shipped to the Tacoma smelter. An interesting feature of the plant is the gunite-covered furnace stack, which is 145 feet long. This was built of one-inch common pine lumber, with four inches of gunite outside and two inches inside. This work was done fifteen months ago and is in good shape, without any repairs having been made.

There follows an approximate flow sheet of the concentrating and smelting operations. For parts of this and other details about the property, the writer is indebted to Mr. S. A. Spellmeyer, mining engineer at the property.

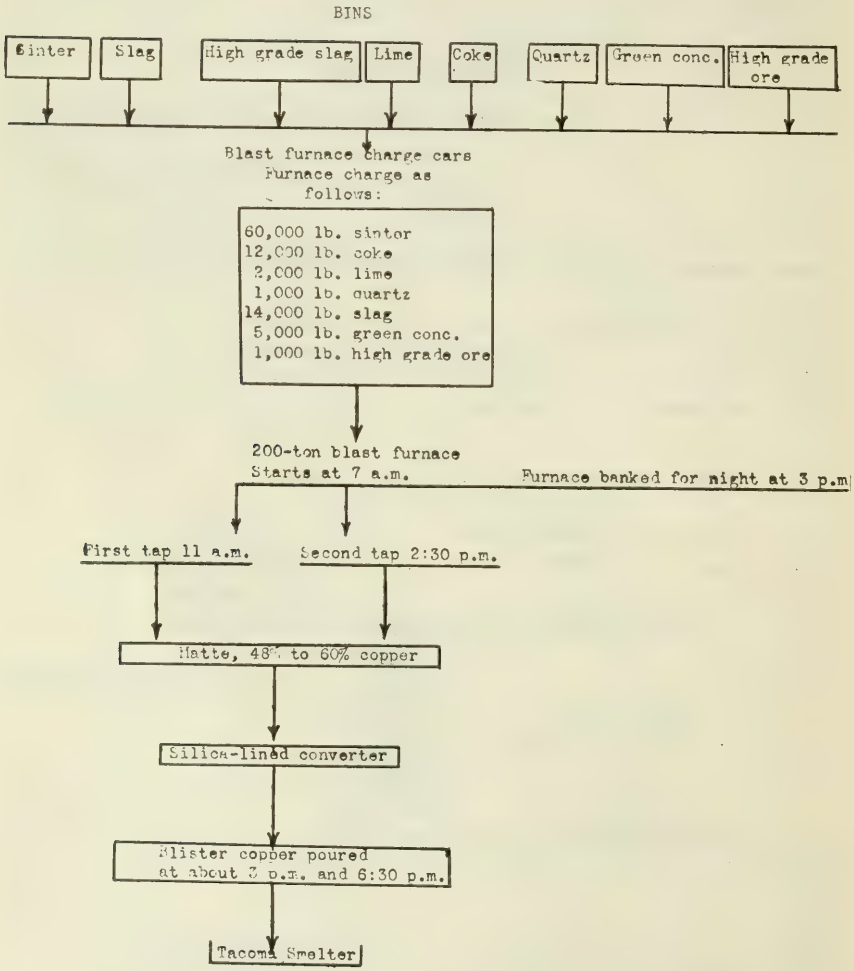
Flow Sheet, Calaveras Copper Company.

PART 1.



Flow Sheet, Calaveras Copper Company.

PART 2.



Mono County.

Comanche Mining and Reduction Company's properties were visited late in 1923 by W. B. Tucker, of the Bureau's Los Angeles office, and the following notes are from a field report prepared by him:

The properties are two miles southwest of Benton and contain 720 acres, including Comanche, Diana-Kerrick and Cornucopia mines, there being in all 12 patented and 22 unpatented claims, covering most of the principal mining claims on Blind Springs Hill.

The Comanche and Diana-Kerrick properties were worked from 1862 to 1889. The Comanche was stoped from the 550 level to the surface for a length of 860 feet and the Diana-Kerrick vein was stoped for a length of 800 feet from the 650 level to the surface. The mines were idle from 1889 to 1917 when reopened by the present company. The elevation is 6000 to 6800 feet.

The deposits consist of base ores in a series of parallel fissure veins in hornblende granite, the principal minerals being tetrahedrite, pyrargyrite, chalcopyrite, pyrite and galena, with silver predominating in value. Veins strike N. 20° W. and the strongest vein, the Comanche, dips 82 degrees east, the others dipping 40 to 45 degrees east. Ore lenses are from 30 feet to 200 feet long and the high-grade streaks are from 2 inches to 3 feet wide.

The four principal shafts are: Comanche, 700 feet deep; Diana, 800 feet deep; Kerrick, 650 feet deep, and Cornucopia, 400 feet deep. The Comanche vein has been drifted 1050 feet, Diana-Kerrick vein 1500 feet and Cornucopia 1000 feet to the time the present company began. The present operators have cleaned out and retimbered the Kerrick shaft to 650 feet where the vein is reported to be 10 feet wide and to be steepening in dip. The recent development has been confined to the Comanche, Kerrick and Hudson Mines. During 1922, $20,000 of ore is reported to have been shipped from the Hudson claim, ore running from $100 to $600 a ton in gold and silver. The Kerrick shaft was being sunk at the time of visit. An inclined shaft was being sunk below the tunnel level on the Hudson claim and a raise was being put up from the Comanche tunnel to the surface. Eighteen men were employed.

Benton Mining and Development Company. J. S. Adair, general manager, 404 Union Bank Building, Los Angeles. This company is developing a group of six claims formerly owned by the Patrick Reddy Estate, and situated four miles south of Benton station on the southeast slope of Blind Spring Hill. Development consists of a tunnel 500 feet long which is being run to develop two veins that were worked in the early eighties. The veins strike north and south and dip 40 to 45 degrees east. Six men were employed.

Placer County.

American Bar Mining Company. John McCandless, president; Harry A. Kunz, secretary. Office, 859 Mills Building, San Francisco. The mine is 3½ miles by road and trail from Michigan Bluff and was described in the 1922 report, but a great deal of new work has been done since.

In the Lewis or upper adit there is a drift 150 feet north and at a point 120 feet from the portal there is a winze 23 feet deep from the

bottom of which a drift runs south 20 feet. The Duffey adit is 220 feet vertically below the Lewis adit. It is a crosscut for 500 feet to the vein, and is then drifted 480 feet south and 170 feet north on the vein. From the face of the north drift they crosscut 65 feet east and 80 feet west. The main crosscut was also run 300 feet past the vein. All the work on this level is new except the first 300 feet of crosscut. J. A. Shields reports that the Duffey south drift is in ore for a length of several hundred feet and an average width of 3½ feet, and also that there is ore for the full length of the Lewis and winze levels, totaling 170 feet. The grade of ore indicated by assays is very good and it is expected that milling will begin soon in the old 10-stamp mill which has been repaired.

A ditch taking water from the river has been put in shape to furnish water for power to operate the mining and milling machinery. It has a capacity of 1000 miner's inches. A total crew of 25 men were employed in February, 1924.

Plumas County.

Engels Copper Mining Company. The annual report of this company, the largest copper producer of the state, for 1923, was made public at the end of February. It shows that during 1923 the output was 14,450,243 pounds of copper of a gross value of $2,081,357; 165,441 ounces of silver of a value of $125,601 and $49,243 gold, or a total gross output of $2,256,201. Cost of copper on the cars at Engels is reported to have been 7.465 cents per pound of copper; freight and smelter charges, less credits for gold and silver were 3.881 cents a pound, and net production cost after allotting reserves for depreciation, compensation insurance and amortization on development is given at 12.931 cents a pound. The average ore milled as mentioned in our past reports, has carried about 2.25 per cent copper. The profit and loss statement for 1923 shows the following items of interest because of their bearing on costs:

Net receipts from concentrates delivered to smelter		$1,467,786 74
Value of concentrates in transit		52,735 51
Total value of production		$1,520,522 25
Sundry profits		23,929 42
Total		$1,544,451 67
Operating expenses—		
Mining ore	$635,338 35	
Milling ore	317,111 73	
Aerial tramming	19,896 58	
Marketing expenses	7,164 14	
Crushing expenses	11,756 55	
General mine expenses	11,294 81	
General expenses, San Francisco office	41,078 94	
Taxes, interest, insurance	35,161 70	
		1,078,802 80
Operating profit		$465,648 87
Less development expenditure		95,675 25
		$369,973 62
Reserve for depreciation	$100,180 36	
Reserve, compensation	33,080 01	
		133,260 37
Balance to profit and loss		$236,713 25

No. 10, the new long tunnel, which starts 6500 feet north of the mill and opens the Engels orebody 480 feet below the No. 7 level, had been nearly finished at the end of the year. This tunnel is 8½ by 8 feet in cross section, 8337.3 feet long to the raises and has cost $28.75 a foot, including equipment required to drive it. The costs of various items in connection with this project are reported as follows:

Haulage tunnel	$240,246 01
Raises	25,305 39
Railroad	39,039 32
Additions to mill	15,853 35
Water line to mill	10,358 61
Total to date of report	$330,802 68
Estimated balance required to complete	75,000 00
Total	$405,802 68

When the tunnel is put in use it will eliminate the tramway from Engels Mine to the mill and is expected to pay for itself in a few years by the saving in operating cost.

Sacramento County.

Associated Development Company, Clay, Cal. This private company has drilled two wells named Mitchell No. 1 and No. 2 in search of oil one-half mile northwest of Clay. No. 1 well was put down about 1900 feet when work was stopped by operating trouble. No. 2 well is about 1250 feet northwest of No. 1 and has been drilled to a depth of 2963 feet (March 20). On that date preparations were being made to cement off water, preparatory to testing the formation near the bottom of the well. The operators state that in the course of drilling several strata of sand have been encountered that gave cuts of oil with ether.

Little light is shed on the underground structure by surface indications. The surface is mantled by gravel and sand and the only formation that has been positively identified is the Ione, but it appears from the physical character of the sand brought up that the hole has been in the Cretaceous series for a long distance and is still in it. The two wells are upon a slight ridge with its long axis northwest and it would be hard to say if this is a minor fold or an erosion feature, though probably the latter.

Sierra County.

H. L. Berkey was given a permit to hydraulic at *Scales Hydraulic Mine* the last week in February. Tailings will drain into Rock Creek, Canyon Creek and North Fork of Feather River. This is the first hydraulic mine to make use of the new Bullards Bar dam of the Yuba River Power Company, but on account of the very dry season little can be done this spring.

Tightner Mine was sold in February to the Alleghany Mining Company, and by the latter company sold immediately to the Original Sixteen-to-One Mining Company. The transfer included all the Tightner property except the Red Star claims, in which the Alleghany Mining Company has carried on for several years a persistent search for the downward extension of rich ore found years ago in the upper workings of the Red Star.

Yuba County.

Nevada Claim. R. H. Postlethwaite, owner; P. M. Simpson, lessee with option, Camptonville. This claim is on Willow Creek about five miles from Camptonville and 21 miles from Nevada City, and is a gravel deposit covered by placer mining tailings and soil. It contains 141 acres, covers about 7000 feet along the creek to an average width of 50 to 75 feet and the best pay stratum is about 4½ feet thick on the bottom. Sampling indicates an average value of about 30 cents a cubic yard and a total depth of 10 feet or more, according to Simpson.

Simpson stated late in March that he has turned over his option and lease on part of the claim to E. T. Fisher and on the balance to Barker of the La Grange Dredging Company. Fisher is installing a drag line scraper to work his portion of the claim and it is expected that the dredging company will begin prospecting work soon with the idea of moving their dredger from La Grange if the property proves satisfactory.

SAN FRANCISCO FIELD DIVISION.

C. McK. Laizure, Mining Engineer.

Contra Costa County.

Chipman Chemical Engineering Company, Inc. This company, which is one of the largest producers of calcium arsenate, lead arsenate, paris green and other insecticides in the United States, recently started operations at its new arsenic reduction works at Martinez, and a small amount of refined white arsenic has already been produced from ores shipped in from various points in California and Nevada.

The new plant at Martinez is situated on the Southern Pacific Railroad and also has water shipping facilities, comprising a dock extending into the bay at which vessels drawing 26 feet of water may be unloaded.

The initial installation consists of storage bins, crushing plant, belt conveyor system, Wright 6-hearth roaster, oil-fired with automatic temperature control, dust chamber and arsenic kitchens. The latter are so arranged that they can be cleaned up during operation, thus making it unnecessary to shut down the plant for the purpose of taking off the arsenic. From the kitchens the waste gases pass into a flue and hence to the stack. Two supplementary roasters are in course of erection.

The arsenic plant was designed by Mr. Ralph N. Chipman, president of the company, and Mr. Charles R. Wraith of the Anaconda Copper Company, and has been erected under Mr. Chipman's personal supervision. For the present the plans are to keep the plant running on custom ore and later also to roast ores to be shipped in from the company's mining properties now under development by its subsidiary, the Arsenic Products and Refining Company.

The new Chipman Chemical Engineering Company's plant is regarded as a valuable supplement to other sources of arsenic production. Its first year's operation is expected to supply about 3000 tons of white arsenic, and this capacity it is expected will be doubled in 1925, when their mines recently acquired get into full production.

The company is in the market for arsenious ores and concentrates preferably with a minimum of 20 per cent arsenic, but will accept lower grade ores if in large quantity. They will be pleased to hear from

parties having arsenic properties, and assay reports will be made on any samples sent in. Address, Chipman Chemical Engineering Company, Inc., Martinez, California. C. L. Pierce is works manager.

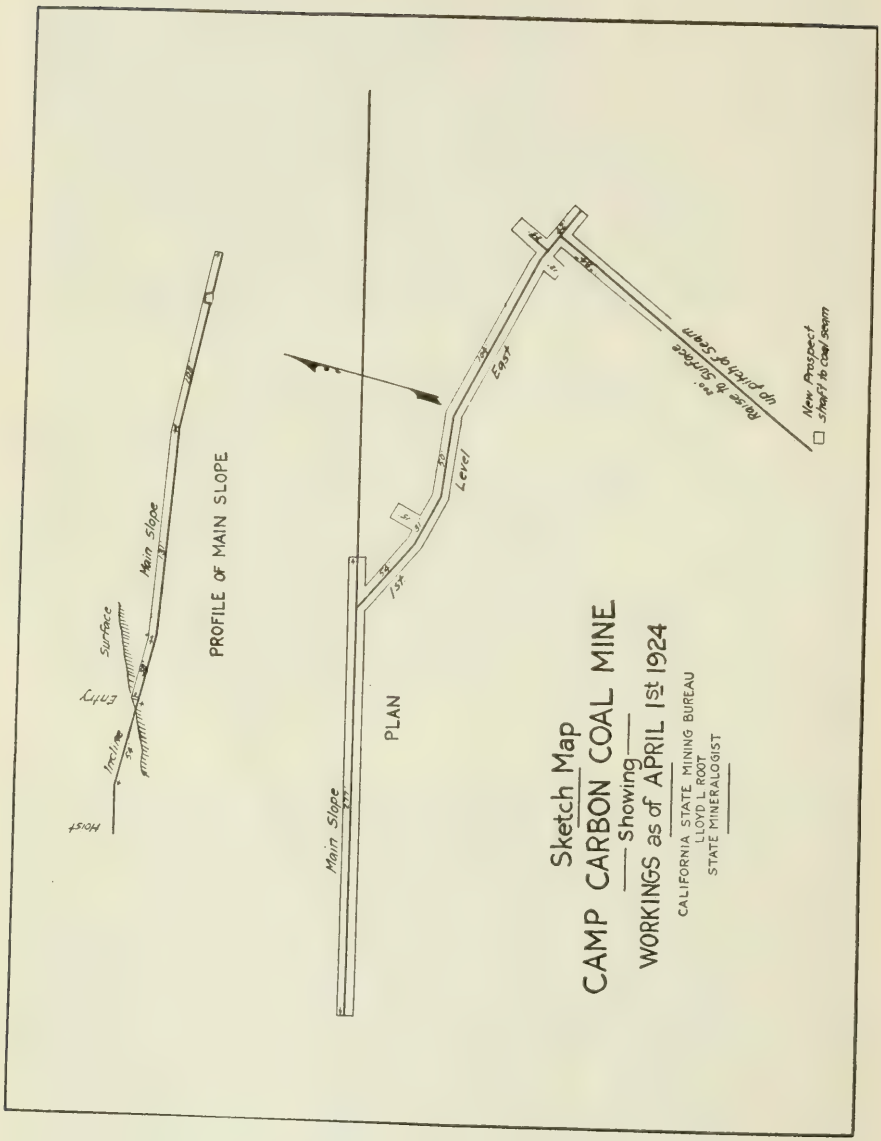
Mount Diablo Lime Marl Company. Property consists of 51 acres, situated about 5 miles northeast of Walnut Creek on what is known as Lime Ridge. Limestone outcrops conspicuously over a considerable area along this ridge. Where opened up by the Mount Diablo Lime Marl Company, the limestone is more or less soft and decomposed near the surface, but as depth is reached in the open cuts the rock becomes crystalline and of a brownish or grayish tint. The property has not been drilled to determine the extent of the deposit, but from the surface exposures and various open cuts, it appears that there is a very considerable tonnage available. The company has a plant for crushing, screening and sacking the ground limestone; or the crude limestone in lump form may be loaded from bins direct to auto trucks. The Southern Pacific Railroad is 1½ miles, and the San Francisco-Sacramento Railroad is 1 mile distant.

The crushing plant contains a gyratory and Grundler hammer mill, operated by electric power. For agricultural use the limestone is ground so that 60 to 80 per cent passes 100 mesh. The calcium carbonate content is controlled by varying the amount of crystalline limestone ground with the softer material. The plant has a capacity of 100 to 150 tons per day of agricultural lime meal. Uncrushed limestone is sold for fluxing to the Martinez smelter of the Mountain Copper Company. Some has also been used by the Pure Carbonic Company of Berkeley for making carbon dioxide gas. Two sheet steel upright kilns were on the ground at the time of visit and it is the intention of the company to erect these and produce calcined lime as well. R. L. Fry, Walnut Creek, is president and general manager, and G. A. Putman is secretary.

Lake County.

T-B-M Prospect. J. W. Mauldin of Finley, C. A. Trailor and G. W. Bruce have obtained from the State Surveyor General a mineral lease on 160 acres of state land located in Sec. 16, T. 12 N., R. 9 W. The property is about 7 miles south of Kelseyville. There is a road to the Fifield ranch, then a trail of 1½ miles to the prospect, which is situated in a rugged portion of the ridge separating Lake and Sonoma counties. The formations in this vicinity are the typical Franciscan of the coast range, consisting of carbonaceous slates, schist and serpentine, much broken and altered. Some quartz float is found in the vicinity, but so far prospecting has failed to locate any definite vein that would indicate a permanent orebody. An incline shaft 40 feet deep, with a slope of about 45 degrees, has been put down along a series of small quartz lenses and silicious segregations, impregnated in places with fine pyrite. Chalcopyrite and bornite also showed occasionally in small quantity. Assays are said to show values of $3 to $23 per ton in gold, none of which is free. So far as developed the showing is not impressive. One man is working.

A somewhat similar deposit was located in 1911, in Sec. 31, T. 16 N., R. 9 W., on which some development work was done and pyrite ore, assaying from $5 to $34 per ton, was reported to have been found.


Sketch Map
CAMP CARBON COAL MINE
Showing
WORKINGS as of APRIL 1st 1924
CALIFORNIA STATE MINING BUREAU
LLOYD L. ROOT
STATE MINERALOGIST
PLAN
Main Slope
1st
Level
East
Raise to Surface
up pitch of Seam
New Prospect
shaft to coal seam
PROFILE OF MAIN SLOPE
Hoist
Incline
Entry
Surface
Main Slope

Mendocino County.

Camp Carbon Coal Mine. A description of this property was included in a report on coal in Mendocino County, published in Report XIX of the State Mineralogist, September, 1923. The Carbon Company, owner, was formally incorporated on December 26, 1923, with an authorized capital of $500,000, divided into 10,000 shares at $50 per share. Officers of the company are J. Cal Ewing, president; Max Horwinski, vice president; Frank T. Thompson, secretary; A. L. Fisher, general manager. Offices, 420 Henshaw Building, Oakland, California. Since the last report the company has installed an additional boiler and other equipment, and continued development of their holdings. At a point approximately 525 feet from the main entry a drift was turned south at right angles, which will be extended up the pitch of the bed and connect with a new prospect shaft that will improve the ventilation and give additional access to the coal. The workings as of April 1, 1924, are shown on the accompanying sketch map.

PLATINUM.

The deposit of platinum and gold, located about 2 miles east of Hopland in Secs. 21 and 28, T. 13 N., R. 11 W., has been recently taken over by Lloyd C. Ashley, 1236 St. Charles street, Alameda, and preparations are being made for working it. A report on the property by Logan[1] was published in Bulletin No. 85. The property was acquired in 1920 by the Mendocino Mining and Milling Company, Inc., and an elaborate plant, operated by electric power and designed to handle 350 tons per 24 hours, erected. Its operation was not successful, and it was shut down after one or two day's trial, and later dismantled, only the concrete foundations remaining. The present owner will adopt a simple washing system.

LOS ANGELES FIELD DIVISION.

W. B. Tucker, Mining Engineer.

Imperial County.

SODIUM SULPHATE.

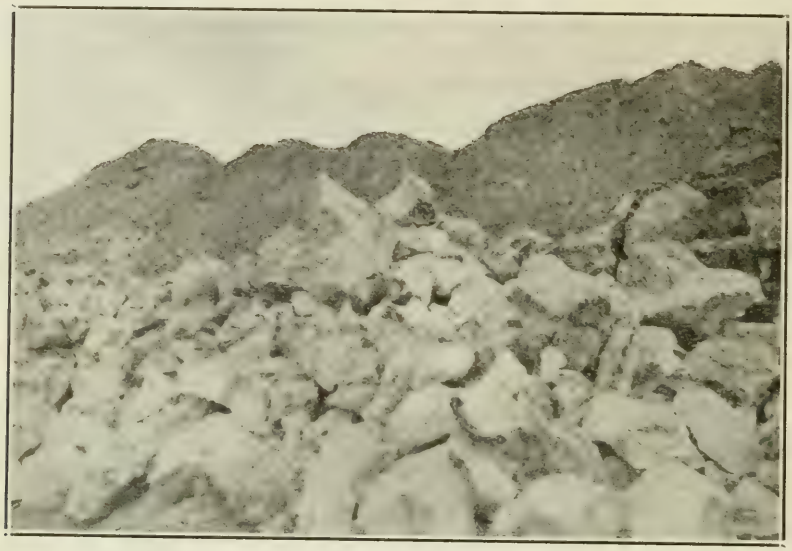
Bertram Sodium Sulphate Deposit is located 2½ miles northeast of Bertram Station on the Southern Pacific Railroad, in Sec. 19, T. 9 S., R. 12 E. Elevation 125 feet below sea level. Holdings consist of 320 acres. Owner, E. N. Smith, El Centro, California.

The eastern border of the Salton Sink is made up of Tertiary sandstones and clay beds extensively folded. In the vicinity of Durmid, Bertram and Frink, these beds have been planed off and form a portion of the smooth, sloping desert floor below the old beach line. Generally, however, along this eastern margin of the desert they are deeply eroded and form rough foothills along the base of the higher mountains to the east.

The deposit is mainly thenardite, anhydrous sodium sulphate, which has a crystal form distinct from that of mirabilite, and is not so subject to alteration on exposure to the air. Mirabilite, glauber salt, is here associated with the thenardite, usually occurring on the top of the veins

[1] C. A. Logan, Platinum and Allied Metals in California, Cal. State Mining Bureau. Bull. 85, 1918.

of thenardite. These parallel veins of sodium sulphate occur in the consolidated clay beds and sandstones which are extensively folded. The general strike of these beds is N. 70° W., dip 30° to 40° N. The



Salt Cake (mainly thenardite, anhydrous sodium sulphate). East open cut, near Bertram Station in the Salton Basin, Imperial County—Photo by E. N. Smith.

Exposure of Salt Cake (thenardite) in West open cut, near Bertram Station in the Salton Basin, Imperial County—Photo by E. N. Smith.

above mentioned veins of thenardite have a thickness varying from 8 inches to 3 feet.

The proved area containing sodium sulphate is about one-half mile

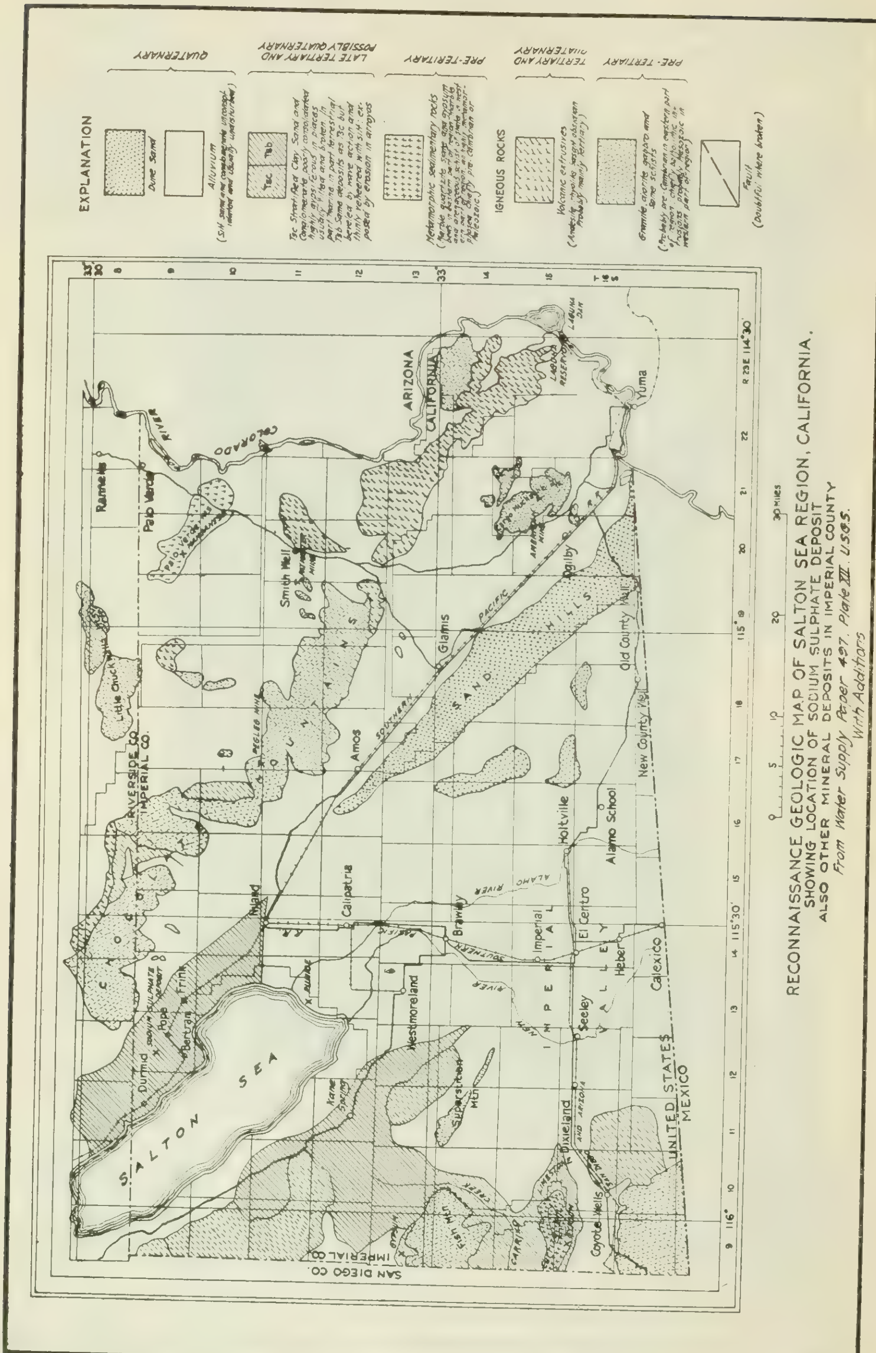
wide, and about 3000 feet in length. Samples taken from borings throughout this area are reported to carry 10 per cent to 12 per cent sodium sulphate.

The deposit was originally located by Havens of Imperial Valley, in 1903, as the Glauber Salt Mine, but it was found that the land was owned by the Southern Pacific Railroad. E. N. Smith, of El Centro, purchased the land in 1919. Mr. Smith developed the deposit during the years 1919 to 1921. The property was under lease to E. H. Otto and Company from November 1922, to June 1923, when operations were

Bertram 'Salt Cake' Deposit, in Salton Basin, Imperial County, showing steam shovel at East open cut.—Photo by E. N. Smith.

suspended. During this period Otto and Company shipped about 2500 tons of salt cake.

Workings consist of an open cut 600 feet in length and about 14 feet in depth, on the east end of the property. In this open cut, three parallel veins of thenardite interbedded in the clay beds were exposed, being about 4 feet apart, and varied in thickness from 18 inches to 4 feet. In the west end of this open cut, the veins formed a junction and the thickness of the material mined is stated to have been about 6 feet. About 2700 feet west of this open cut is another open cut about 200



RECONNAISSANCE GEOLOGIC MAP OF SALTON SEA REGION, CALIFORNIA.
SHOWING LOCATION OF SODIUM SULPHATE DEPOSIT
ALSO OTHER MINERAL DEPOSITS IN IMPERIAL COUNTY
From Water Supply Paper 497, Plate III. U.S.G.S.
With Additions

feet in length and 14 feet deep. Here two veins of thenardite were worked, which had an average thickness of 2 feet, being separated by beds of clay about 4 feet thick. The dumps from these open cuts are stated to carry 12 per cent sodium sulphate.

Samples of sodium sulphate crystals collected by E. N. Smith were analyzed by Smith, Emery and Company, of Los Angeles, as follows:

Analysis of sodium sulphate from Bertram, California—Sample No. 1:

Water Insoluble	Trace
Iron and Aluminum Oxides	None
Calcium Oxide (CaO)	None
Magnesium Oxide (MgO)	Trace
Sodium Oxide (Na_2O)	43.64%
Moisture (105°)	.07%
Combined Water	.12%
Chlorine (Cl)	.10%
Boric Anhydride (B_2O_3)	None
Sulphuric Anhydride (SO_3)	56.22%
Total	100.15%

Hypothetical Combination:

Sodium Sulphate (Na_2So_4)	99.80%
Sodium Chloride (NaCl)	.16%
Magnesium Sulphate ($MgSo_4$)	Trace
Moisture and Combined Water	.19%
Total	100.15%

Sample No. 2:

Water Insoluble	0.39%
Iron and Aluminum	None
Calcium Oxide (CaO)	None
Magnesium Oxide (MgO)	0.16%
Sodium Oxide (Na_2O)	43.40%
Moisture (105°)	.02%
Combined Water	.35%
Boric Anhydride (B_2O_3)	None
Sulphuric Anhydride (SO_3)	56.40%
Total	100.72%
Purity as Sodium Sulphate (Na_2So_4)	98.80%

There is an increased demand for sodium sulphate which is used in the making of wood pulp in the United States by the so-called sulphate process. This process uses sodium sulphate in making sodium sulphide, which is one of the active chemicals in the process, the other being sodium hydroxide. Salt cake for this process should be ground, and should contain at least 95 per cent of anhydrous sodium sulphate. The sodium chloride should not exceed 2 per cent. Sodium sulphate is also used in the manufacture of glass.

Los Angeles County.

California Clay Products Company, offices 315 Western Mutual Life Building, Los Angeles, Victor Kremer, president and R. B. Keeler, secretary, has recently increased the capacity of its plant at Southgate. The company controls large deposits of white burning clay in San Diego County. Their principal products are glazed and colored tile.

San Bernardino County.

CLARK MOUNTAIN DISTRICT.

This district embraces that portion of the old Ivanpah District in the immediate vicinity of Clark Mountain. The district is situated in T. 17 and 18 N., R. 13 and 14 E., 10 miles northeast of Valley Wells, and 17 miles west of Roach station on the Union Pacific Railroad. The district contains deposits of gold, lead, silver, and tungsten.

The formation of the district consists principally of quartz-monzonite and limestone. The gold veins occur in quartz-monzonite. Wolframite and scheelite occur associated together in a system of narrow quartz fissure veins in quartz-monzonite. The silver-bearing lodes occurring in Cambrian limestone, though not large, produced considerable rich silver ore. Silver mining in this district was active during the '80s and early '90s. Most of the old mines ceased operations when the price of silver dropped below $1, and since that time have only been worked spasmodically by 'chloriders.'

Among the most important producers were the following: Allie and Beatrice, Bob Lee and Hattie, Coliseum, Lizzie Bullock, Monitor, U. S. and Stonewall mines.

MINES.

Coliseum Mine, situated in the Clark Mountain District, on the east slope of Clark range of mountains, at an elevation of 5000 feet, 32 miles south of Good Springs, Nevada, and 10 miles northeast of Valley Wells.

Holdings consist of two patented claims, known as Coliseum No. 1 and No. 2, and 20 claims held under location, located in T. 17 N., R. 13 E. Owner, T. W. Devereaux, Pasadena, California. The property was taken over under option September 1, 1923, by C. H. Gowman, Hollywood, California.

The ore occurs along fractures in quartz-monzonite, which strike N. 50° E. to N. 70° E., and dip 80° S. The filling along these fractures has been silicified, and occurs as a silicified breccia which is mineralized with iron pyrite and some chalcopyrite. The orebody developed is about 50 feet wide, and 100 feet in length. The average value is said to be $7 in gold. Developments consist of vertical shaft 200 feet deep with levels at 100 and 200 feet. Crosscuts have been driven north on the 100-foot and 200-foot levels, 350 feet, with drifts to the southwest in the orebody. On the opposite slope of the ridge, a cross-cut tunnel has been driven S. 28° E., 600 feet. At 500 feet from the portal it cut the first showing of ore. At 600 feet from the portal, a drift has been driven northeast 70 feet, of which 40 feet is in ore, and another drift has been driven southwest 125 feet in ore. The orebody developed on this level is about 60 feet wide and 125 feet in length, and is said to average $7 per ton in gold. Present development is confined to driving a tunnel on the southwest slope of the ridge to cut the orebody on the same level as the shaft. Water is secured from Old Green Mine, formerly operated by the Mojave Tungsten Company of New York, now owned by S. E. Yates of Valley Wells. Four men are employed.

Bank Roll and Green Gold Group of claims are located in Clark Mountain Mining District, in T. 17 N., R. 13 E., on the west slope of Clark Mountain, 7 miles northeast of Valley Wells, and 23 miles north

of Cima, a station on the Union Pacific Railroad. Elevation 6000 feet. Owner, Louis F. Keiper, Cima.

Holdings consist of six claims known as Contact, Bank Roll No. 1 and No. 2, Green Gold, Green Gold No. 1 and No. 2.

Ore occurs along a series of north-south and east-west fissures in quartz-monzonite intrusion, not far from the limestone contact. These fissures are narrow, not over 8 inches to 2 feet in width, and small lenses of lead ore occur at intersections of the fissures.

The principal minerals are galena, sphalerite, and chalcopyrite, which carry values in gold and silver, in a quartz gangue. Samples taken from different workings are reported to assay Ag = 20 ozs., Pb = 25%. Development consists of a number of tunnels and open cuts on the different claims. The most extensive amount of development is confined to the Bank Roll claims. Here a cross-cut tunnel was driven S. 50° E. 300 feet, then as a drift S. 50° W., 200 feet towards the contact of quartz-monzonite and limestone. About 100 feet in elevation above this tunnel, there is a tunnel 50 feet in length driven on a N. 40° E. fissure, which developed a small lens of lead sulphide ore.

On Green Gold claims there are two tunnels about 50 feet in length which developed some ore.

On the Contact claim, which is located along the granite and limestone contact, in an open cut, there is exposed 4 feet of silicified brown limestone which is mineralized with galena.

Calarivada Silver Mines comprises 15 claims located on the north slope of the Clark Mountain range of mountains, in T. 18 N., R. 13 E., 12 miles northeast of Valley Wells. Owner, Calarivada Silver Mines, Inc., of Detroit, Michigan; Walter X. Osborne, president and general manager.

Developments consist of a 200-foot shaft. Ore carrying values in copper, gold and silver occurs in fractures in limestone. Equipment consists of 12-h.p. gasoline hoist, cars and blacksmith shop. Two men are employed.

Copper Commander Group (copper), consists of four claims, which adjoin the Copper World Mine on the northwest, situated in the Clark Mountain Mining District, 6 miles northeast of Valley Wells and 22 miles north of Cima, a station on the Union Pacific Railroad. Elevation 5500 feet. Owner, Mike Conway, Cima, California.

The ore occurs in a broad mineralized zone at contact of granitic porphyry and limestone. The granitic porphyry is an intrusive into hard gray colored limestone, and the copper ores are found through the porphyry for a considerable distance from the contacts. In the mineralized zone which is about 200 feet in width, and has a general northwest strike, veinlets of copper ore occur mostly as brown oxides, with occasional bunches of malachite and azurite. Very little sulphide ore has been encountered, but some chalcopyrite was encountered in lower workings on the property. The ore is low grade, said to average about 4 per cent with occasional bunches of 10 per cent copper ore.

Workings consist of a tunnel 140 feet in length driven southeast on contact of porphyry and limestone, also a number of short tunnels and open cuts made along the contact, all of which expose some ore. One man is employed.

Ellingford-Nipton Group consists of three claims located 10 miles northeast of Valley Wells, in the Clark Mountain Mining District. Elevation 5000 feet. Owner, Thomas E. Creed, Santa Ana, California.

Developments consist of two shafts 20 feet deep, sunk on a N. 60° E. fissure in the limestone. A small lens of ore has been developed where this fissure was cut by a northwest fissure. The ore occurs as silver chloride, with some bunches of black metal. Average value is said to be about 20 ounces in silver and 6 per cent lead. This prospect is located west of the Coliseum Mine. Two men are employed.

Silver King Mine consists of six claims located in T. 18 N., R. 13 E., in the Clark Mountain Mining District, 10 miles northeast of Valley Wells. Owner, Jack Encell of Los Angeles. Silver bromide and chlorides occur along a fault fissure in the limestone, which has a course of N. 40° W., dip 40° southwest. Developments consist of a tunnel 160 feet in length and a number of open cuts along the fissure. Idle.

Snow Storm Mine consists of four claims located in T. 18 N., R. 13 E., in the Clark Mountain Mining District, 12 miles northeast of Valley Wells. Silver bromide and chloride ores occur along northwest and southeast fissures in the limestone. Three shafts have been sunk on the different fissures to depths of 60 feet, exposing veins 12 inches to 3 feet wide, which dip 30 degrees to the southwest. The ore is stated to assay from 10 to 50 ounces in silver. George Miller, of Good Springs, Nevada, owner.

Stonewall Mine is located in T. 18 S., R. 13 E., in the Clark Mountain Mining District, about 12 miles northeast of Valley Wells, and 18 miles northwest of Nipton Station on the Union Pacific Railroad.

Holdings consist of 15 claims. Owners, Martin A. Kiwisar and B. M. Laurence, of Good Springs, Nevada.

This property was extensively worked from 1881 to 1896, and was one of the largest silver producers of the district. Developments consist of a number of tunnels driven at different elevations along a fault fissure which has a general strike of N. 35° W., dip 50° northeast. Width of vein was about 3 feet. The ore, which is a bromide and chloride of silver, occurred in irregular lenses along this fracture. A lower tunnel was driven west 100 feet to the vein, then 500 feet to the southeast on the vein, which has been stoped out to the surface. About 150 feet above this tunnel, there is another tunnel driven 600 feet on the fissure, which also has been stoped out to the surface. Idle.

U. S. Mine is located in T. 18 N., R. 13 E., in the Clark Mountain District, about 12 miles northeast of Valley Wells, and 17 miles northwest of Nipton, a station on the Union Pacific Railroad. Elevation 5000 feet.

Holdings consist of four claims, owned by C. R. Loomis, of Good Springs, Nevada. Under option to Calarivada Silver Mines, Inc. Walter X. Osborne, manager.

Property has been worked off and on since 1880 and was an important producer of silver ore in this district. Workings consist of three tunnels. The lower or main working tunnel is driven S. 20° W., 150 feet, where the Beatrix vein was cut. This vein has been drifted on 150 feet southeast, and 600 feet to northwest. The vein is 4 feet wide, and

the ore occurred as bromide and chloride of silver, in lenses along the fissure. This vein has been stoped to the surface. Several winzes have been sunk to a depth of 40 feet below the tunnel level which show from 8 inches to 2 feet of ore. Vein strikes N. 30° W., dip 50° northeast. There is another vein known as the U. S. which lies south of the Beatrix vein, and runs parallel to it, but dips 40 degrees to the northeast. This vein is developed by a cross-cut from the north drift on the Beatrix vein. The mine is reported to have produced some very high-grade silver ore. The lower workings have been recently cleaned out and retimbered. Two men are employed.

Valentine Group comprises 14 claims located on the western slope of Clark Mountain, in T. 17 N., R. 13 E., 5 miles northeast of Valley Wells, and 23 miles north of Cima, a station on the Union Pacific Railroad. Elevation 6500 feet. Owner, Louis F. Keiper, Cima.

These claims were located in February 1920, on the discovery of some high-grade argentiferous lead sulphide ore along a fissure in the limestone. The country rock consists of gray limestone with beds of shale and diorite intrusions along the bedding planes of the limestone. The limestones and shales are very much folded on the western slope of Clark Mountain. Lead sulphide and lead carbonate occur along a fissure in the limestone, conformable to the bedding planes of the limestone which is folded along the strike. The general course of the fissure is north, with a dip of 50 degrees to the east. The fissure has an average width of 5 feet and is filled with brown silicified limestone with a diorite intrusion on the footwall. The silicified limestone is mineralized with galena and lead-zinc carbonates. At different places along this fissure for 4000 feet, showings of galena ore have been exposed in open cuts and prospect shafts. The most extensive work has been done on Valentine No. 1 claim. Here a cross-cut tunnel has been driven 130 feet to cut the ore exposed in a tunnel 50 feet in length at a higher elevation. The ore exposed in this upper tunnel has a width of 5 feet and is developed for 30 feet in length. Samples taken from these workings are reported to have assayed 8 to 15 ounces in silver, and 30 per cent lead. Workings on this claim consist of 3 open cuts and two tunnels, all showing galena and carbonate ore.

On Valentine No. 2 claim, about 150 feet south of No. 1 workings, along the fissure is a small cave deposit filled with lead-zinc carbonates, said to carry 10 to 15 per cent zinc, and 10 to 15 per cent lead. There are thirty tons of sorted ore on the dump of No. 1 workings, which, it is stated, will assay 50 per cent lead. Water is secured from Pachalka Spring, which is located about one mile from the workings. Two men are employed.

LEAD MOUNTAIN DISTRICT.

War Eagle Mine is located on the eastern slope of the Lead Mountains in T. 4 N., R. 10 E., 9 miles south of Bagdad, a station on the Atchison, Topeka and Santa Fe Railroad. Elevation, 1800 feet. Owner, *Bagdad Silver Mines Company*, 53 State street, Boston, Mass. C. O. Ellingwood, president; J. F. Mullen, secretary.

Holdings consist of Alpha, Lead King, and Lead Queen group of claims, comprising 320 acres. The property was worked by the Southwestern Lead Company of Los Angeles from 1912 to 1920, when

acquired by the Bagdad Silver Mines Company which operated the property continuously until June 1923, when operations were suspended.

The ore deposits occur in a well-defined fault fracture in rhyolite porphyry, striking N. 60° W., and dipping 40° southwest. The hanging wall of the fault is a brecciated tufa. The ores found along the fissure are similar in character, being chlorides and chloro-bromides, with some galena and lead carbonates in crushed breccia in the fissure. Irregular ore bodies occur in the fissure varying from 12 inches to 12 feet in width. An incline shaft has been sunk on the vein to a depth of 700 feet, with levels at 100, 200, 300, 400, 500, and 600 feet, with over 7000 feet of drifts and cross-cuts. The oreshoot trends to the northwest and below the 200-foot level all development has been to the northwest. It is stated that the average ore mined assayed 8 per cent lead, and 7 ozs. silver. The ore mined was treated in a 25-ton concentration mill.

Mill equipment: 8″ x 7″ Blake crusher, Challenge ore feeder, Ball mill, and two Wilfley tables; also Stebbins dry concentrator. Mill driven by 37½-h.p. Fairbanks-Morse gas engine. Water for mill secured from well on dry lake, 3 miles northeast of mine.

Pump equipment: 4″ x 6″ Triplex pump driven by 40-h.p. Fairbanks-Morse gas engine.

Mine equipment: 37½-h.p. Fairbanks-Morse gas engine hoist, compressor, air drills, cars, blacksmith shop, assay office, and bunkhouses. When operating, 20 men were employed. Idle.

RANDSBURG DISTRICT.

California Rand Silver, Inc., during the latter part of February, curtailed mill operations to one shift per day of eight hours, and the regular dividend disbursement of 2 cents per share, or $25,600 monthly, will be discontinued until ore reserves are increased by intensive development. For four years the company has paid 2 cents per month, and, in addition, has paid four extra dividends of 10 cents, making a total of $3,018,400 in dividends. The company plans an intensive development campaign to explore new territory on the property, to add to the present ore reserves in proven territory. The company reports that the development work during the past six months has proven satisfactory, and three promising ore zones have been developed.

During January, 8100 tons of ore was milled, averaging $18.10 per ton. Concentrates shipped amounted to 456 tons, which netted approximately $106,776. For the month of February 4698 tons of ore was milled; a daily average of 162 tons.

The highest extraction ever obtained by the company in the operation of the mill, was made during the month of February, the average gold extraction being 84.5 per cent; silver extraction was 97.46 per cent, making a total extraction of 96.20 per cent. The net value of the concentrates shipped was approximately $128,347.50. During the month, 1621 feet of new development was completed.

TUNGSTEN.

Atolia Mining Company, whose property is situated in the Atolia tungsten district, near Randsburg, and formerly the largest producer of tungsten ore in California, recently reopened the mine on a leasing

basis. Leases are being granted by the company to miners who may want to prospect and work outlying sections of the property. The company offers to take the ore, concentrate it and market the product, half of the proceeds to be paid to the lessee. In addition, supplies and tools are furnished the lessees at cost, and necessary equipment and machinery to develop mine and hoist the ore, are rented to them under reasonable terms. Payment by the company is to be made on the basis of one-half of 90 per cent of the average quoted market value for 60 per cent tungstic acid, domestic scheelite ore, f.o.b., Pittsburgh, Pa., the quotations to be taken from the Engineering and Mining Journal-Press for the week ending 30 days after date of the preliminary sampling at Atolia. Payment for ores less than 60 per cent tungstic acid content is on the basis of a sliding scale; 75 per cent on content for ores 2 per cent tungstic acid or less; 80 per cent on 10 to 20 per cent tungstic acid content; 85 per cent on 20 to 30 per cent tungstic acid content; 95 per cent on 50 to 60 per cent tungstic acid content, and 100 per cent on ores containing 60 per cent or over in tungstic acid.

Approximately 20 lessees are working on what is known as the 'spud patch.'

Ventura County.

Gillibrand Limestone Deposit, located 5 miles north of Santa Susana, a station on the Southern Pacific Railroad, in Secs. 17 and 18, T. 3 N., R. 17 W., S. B. B. and M. Owner, E. C. Gillibrand of Santa Susana.

Holdings consist of 200 acres, of which 100 acres, located in Sec. 18, is under lease to the *Ventura County Lime and Fertilizer Company,* of Santa Paula, California. E. D. Goodenough, president.

A massive bed of limestone is exposed on the western slope of the Santa Susana Mountains, north of Simi Valley. The general strike of the limestone belt is northeast and southwest with a dip of about 30 degrees to the southeast. The exposure on the property is about 3000 feet in length, and has an average width of 300 feet. It is a decomposed shell deposit of lime.

Analysis by Smith Emery Company:

CaO	54.64%
CO_2	42.86%
$CaCo_3$	97.60%
P_2O_5	.07 to .33%
Insoluble	2.07%

The material is suitable for fertilizer.

Ventura Velvet Molding Sand Deposit is located within the city limits of Ventura, on ridge south of Buena Vista Canyon, a mile north of the Southern Pacific Railroad Station, at Ventura. Owner, Charles A. Cole, Ventura, California.

Holdings consist of 28 acres. A bed of unconsolidated sandy loam and fine-grained sand said to be 100 feet thick is exposed in the canyon.

Quarry is 200 feet in length and 75 feet to 100 feet in height. Material handled with scrapers to bins, then screened through No. 4 mesh trommel, oversize going to a set of rolls.

Quality: The sand is very fine grained. About 96 per cent of the sand will pass through 100 mesh, and 48 per cent through the 200 mesh. The sand has a good bond.

Analysis.

Silica	66.25%
Iron Oxide	8.75%
Aluminum Oxide	12.75%
Calcium Oxide	3.07%
Magnesium Oxide	2.70%
Alkalies	2.40%
Loss in ignition and undetermined	4.33%
Total	100.25%

OIL FIELD DEVELOPMENT OPERATIONS.

By R. D. Bush, State Oil and Gas Supervisor.

From December 29, 1923, to and including April 12, 1924, the following new wells were reported as ready to drill:

Company	Sec.	Twp.	Range	Well No.	Field
FRESNO COUNTY:					
Alta Vista Oil Co.	6	21	15	Recovery	Coalinga
Coalinga Empire Oil Co.	6	21	15	6	Coalinga
Premier Oil Co.	24	20	14	27	Coalinga
Snowolene Oil Co.	22	21	15	1-A	----------
KERN COUNTY:					
Bear State Oil Co.	30	28	21	12	Belridge
D. S. & W. Oil Co.	22	25	18	1	Devils Den
C. H. Finley	25	25	18	1	Devils Den
Associated Oil Co.	26	30	24	3	Elk Hills
Associated Oil Co.	26	30	24	22	Elk Hills
Associated Oil Co.	26	30	24	21	Elk Hills
Associated Oil Co.	26	30	24	31	Elk Hills
Belridge Oil Co.	34	30	24	11	Elk Hills
Belridge Oil Co.	34	30	24	13	Elk Hills
Belridge Oil Co.	34	30	24	5	Elk Hills
Pacific Oil Co.	27	30	24	55	Elk Hills
Pacific Oil Co.	27	30	24	59	Elk Hills
Pacific Oil Co.	27	30	24	54	Elk Hills
Pacific Oil Co.	27	30	24	22	Elk Hills
Pacific Oil Co.	35	30	24	74	Elk Hills
Pacific Oil Co.	35	30	24	84	Elk Hills
Pan American Petroleum Co.	6	31	25	Crampton 12-C	Elk Hills
Pan American Petroleum Co.	6	31	25	Crampton 18-A	Elk Hills
Union Oil Co.	26	30	24	Elk Hills 6	Elk Hills
Gray Heirs	3	29	28	44	Kern River
Gray Heirs	3	29	28	45	Kern River
Union Oil Co.	11	28	27	Del Rey 7	Kern River
Jewett Oil Co.	13	30	21	16	McKittrick
Potter Oil Co. of California	6	30	22	Fee 2	McKittrick
Balboa Oil Co.	24	31	23	19	Midway
Bell-Evans Oil Co. Inc.	35	32	23	4	Midway
Berry & Ewing	31	32	24	16	Midway
Berry & Ewing	31	32	24	7	Midway
Brookshire Oil Co.	24	31	22	11	Midway
Calivada Oil Co.	34	32	24	1	Midway
C. C. M. O. Co.	25	31	22	20	Midway
C. C. M. O. Co.	9	32	23	35	Midway
C. C. M. O. Co.	25	31	22	18	Midway
C. C. M. O. Co.	9	32	23	36	Midway
Eskridge & Craise Oil Co.	34	30	22	1	Midway
Formax Oil Co.	36	32	23	12	Midway
Formax Oil Co.	36	32	23	13	Midway
Formax Oil Co.	36	32	23	14	Midway
Formax Oil Co.	36	32	23	15	Midway
General Petroleum Corp.	32	31	24	8	Midway
General Petroleum Corp.	36	32	23	Alpine 4	Midway
General Petroleum Corp.	36	32	23	Alpine 3	Midway
General Petroleum Corp.	36	32	23	Alpine 6	Midway
Honolulu Consolidated Oil Co.	6	32	24	21	Midway
Honolulu Consolidated Oil Co.	8	32	24	78	Midway
Honolulu Consolidated Oil Co.	4	32	24	34	Midway
Honolulu Consolidated Oil Co.	4	32	24	82	Midway
Ralph Lavin	28	32	23	2	Midway
E. G. Lewis	35	32	23	11	Midway
Midlands Oilfields Co. Ltd.	24	31	23	5	Midway
Midlands Oilfields Co. Ltd.	34	31	24	2	Midway
Midlands Oilfields Co. Ltd.	24	31	23	6	Midway
Midway Oil Co.	36	32	23	Alpine 1	Midway
Midway Oil Co.	36	32	23	Alpine 2	Midway
North American Oil Cons.	30	31	24	6	Midway
North American Oil Cons.	30	31	24	7	Midway
Pacific Oil Co.	25	31	23	33	Midway
Pacific Oil Co.	31	31	24	67	Midway
Pacific Oil Co.	3	32	24	40	Midway
Pacific Oil Co.	33	31	24	21	Midway
Pacific Oil Co.	5	32	24	85	Midway
Pacific Oil Co.	15	32	24	51	Midway
Pacific Oil Co.	1	32	23	97	Midway
Pacific Oil Co.	25	31	23	32	Midway
Southwestern Petroleum Co.	2	31	22	4	Midway
Southwestern Petroleum Co.	2	31	22	5	Midway

Company	Sec.	Twp.	Range	Well No.	Field
KERN COUNTY—Continued:					
Transport Oil Co.	26	32	23	1	Midway
Victor Oil Co.	35	32	23	10	Midway
Vivian B Oil Co.	35	32	23	6	Midway
C. J. Berry	34	12	24	Hillside 22	Sunset
C. J. Berry	34	12	24	Hillside 25	Sunset
General Petroleum Corp.	18	11	23	2-B	Sunset
General Petroleum Corp.	18	11	23	3-B	Sunset
General Petroleum Corp.	18	11	23	7-B	Sunset
General Petroleum Corp.	18	11	23	11-A	Sunset
E. G. Lewis	6	11	23	10	Sunset
Pacific Oil Co.	3	11	23	11	Sunset
Pliocene Oil Co.	18	11	23	1	Sunset
Western Minerals Co.	18	11	23	61	Sunset
Western Minerals Co.	17	11	23	53-F	Sunset
Western Minerals Co.	18	11	23	41	Sunset
Western Minerals Co.	17	11	23	33	Sunset
Western Minerals Co.	17	11	23	42-F	Sunset
Western Minerals Co.	18	11	23	51	Sunset
Western Minerals Co.	18	11	23	61	Sunset
Western Minerals Co.	17	11	23	23	Sunset
Standard Oil Co.	28	11	20	Kern Co. Lease 2 10	Wheeler Ridge
Standard Oil Co.	28	11	20	Kern Co. Lease 2 11	Wheeler Ridge
Bell & Wrightsman, Inc.	29	11	23	1	----------
T. A. Piper	11	27	28	Piper 3	----------
T. A. Piper	15	27	28	Piper 4	----------
T. A. Piper	14	27	28	Piper 5	----------
T. A. Piper	15	27	28	Piper 6	----------
KINGS COUNTY:					
General Petroleum Corp.	28	22	18	Ochsner 28 1	----------
LOS ANGELES COUNTY:					
General Petroleum Corp.	28	3	13	White 2	Dominguez
General Petroleum Corp.	29	3	13	Austin 2	Dominguez
General Petroleum Corp.	28	3	13	Gardena 2	Dominguez
Shell Co.	33	3	13	Reyes 2	Dominguez
Shell Co.	34	3	13	Childs 1	Dominguez
Shell Co.	28	3	13	Hellman 1	Dominguez
Shell Co.	33	3	13	Reyes 3	Dominguez
Shell Co.	33	3	13	Reyes 4	Dominguez
Shell Co.	33	3	13	Reyes 5	Dominguez
Union Oil Co.	33	3	13	Hellman 2	Dominguez
Union Oil Co.	33	3	13	Callender 2	Dominguez
Union Oil Co.	29	3	13	Callender 4	Dominguez
Union Oil Co.	28	3	13	Hellman 3	Dominguez
Union Oil Co.	33	3	13	Hellman 4	Dominguez
Union Oil Co.	33	3	13	Callender 5	Dominguez
United States Royalties Co.	20	3	13	23	Dominguez
Dabney, Colter & Delaney	24	4	13	Lucky Hoffman 1	Long Beach
De Lendrecie Oil Well	19	4	12	Malloy 1	Long Beach
Federal Drilling Co.	24	4	13	Leedom 1	Long Beach
General Petroleum Corp.	19	4	12	Jonah 4	Long Beach
General Petroleum Corp.	19	4	12	K. & H. 5	Long Beach
R. E. Ibbetson Drilling Co.	24	4	13	3	Long Beach
A. T. Jergins Trust	19	4	12	10	Long Beach
A. T. Jergins Trust	19	4	12	11	Long Beach
A. T. Jergins Trust	19	4	12	12	Long Beach
Marine Oil Corp.	19	4	12	14	Long Beach
Marine Oil Corp.	19	4	12	24	Long Beach
Marine Oil Corp.	19	4	12	17	Long Beach
Petroleum Midway Co. Ltd.	19	4	12	Fields 7	Long Beach
Petroleum Midway Co. Ltd.	19	4	12	Bauman 3	Long Beach
Petroleum Midway Co. Ltd.	29	4	12	Brown 2	Long Beach
Petroleum Midway Co. Ltd.	29	4	12	Chamberlin 1	Long Beach
Petroleum Midway Co. Ltd.	19	4	12	Fields 9	Long Beach
Petroleum Midway Co. Ltd.	19	4	12	Fields 12	Long Beach
Petroleum Midway Co. Ltd.	19	4	12	O'Neill 3	Long Beach
W. R. Ramsey	29	4	12	Flower State 1	Long Beach
W. R. Ramsey	28	4	12	B-3	Long Beach
W. R. Ramsey	28	4	12	McNaughton 1	Long Beach
W. R. Ramsey	28	4	12	Morrison-Barstow 1	Long Beach
W. R. Ramsey	28	4	12	B-4	Long Beach
Regina Petroleum Corp.	24	4	13	Judd 2	Long Beach
Sack-Campbell, Schaffner	24	4	13	1	Long Beach
San Martinez Oil Co.	29	4	12	Booth Com. 3	Long Beach
San Martinez Oil Co.	29	4	12	Greene Com. 2	Long Beach
San Martinez Oil Co.	29	4	12	Booth Com. 4	Long Beach
Shell Co.	29	4	12	Alamitos 13	Long Beach
Shell Co.	29	4	12	Alamitos 12	Long Beach
Shell Co.	29	4	12	Alamitos 14	Long Beach
Shell Co.	29	4	12	Alamitos 15	Long Beach
Shell Co.	29	4	12	Alamitos 16	Long Beach

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES COUNTY—Continued:					
Shell Co.	29	4	12	Patton Wilson 3	Long Beach
Shell Co.	29	4	12	Hutton Com 4	Long Beach
Shell Co.	28	4	12	Alamitos 19	Long Beach
Shell Co.	29	4	12	Alamitos 18	Long Beach
Shell Co.	29	4	12	Alamitos 17	Long Beach
Shell Co.	29	4	12	Goddard 5	Long Beach
Shell Co.	29	4	12	Stakemiller 4	Long Beach
Shell Co.	24	4	13	3	Long Beach
C. A. Son	6	2	11	16	Montebello
McGinley Oil Co.	5	3	11	Anderson 53-B	Santa Fe Springs
General Petroleum Corp.	5	3	11	Santa Fe 52-C	Santa Fe Springs
General Petroleum Corp.	6	3	11	Foix 3	Santa Fe Springs
Petroleum Midway Co. Ltd.	12	6	11	Thomson 4	Santa Fe Springs
Standard Oil Co.	6	3	11	Bell 25	Santa Fe Springs
Union Oil Co.	20	4	13	1	Torrance
Anglo-American Oil Co.	23	4	14	1	Torrance
Armstrong & Guthrie	8	4	14	Watson 4	Torrance
Associated Oil Co.	23	4	14	1	Torrance
Bear Oil Co.	23	4	14	Jean 1	Torrance
Jos. J. Berliner	16	4	14	1	Torrance
W. C. Bramham	23	4	14	5	Torrance
Bush-Voorhis Oil Co.	23	4	14	7	Torrance
Bush-Voorhis Oil Co.	23	4	14	M. & M. 1	Torrance
California Drilling Co.	23	4	14	1	Torrance
E. B. Campbell	23	4	14	3	Torrance
Catalina View Oil Co.	14	4	14	Kettler 5	Torrance
C. C. M. O. Co.	14	4	14	Kettler 6	Torrance
C. C. M. O. Co.	14	4	14	Torrance 32	Torrance
C. C. M. O. Co.	14	4	14	Kettler 8	Torrance
C. C. M. O. Co.	10	4	14	Torrance 30	Torrance
C. C. M. O. Co.	23	4	14	Kettler 9	Torrance
C. C. M. O. Co.	23	4	14	Kettler 10	Torrance
C. C. M. O. Co.	15	4	14	Torrance 33	Torrance
C. C. M. O. Co.	15	4	14	Torrance 35	Torrance
C. C. M. O. Co.	15	4	14	Torrance 36	Torrance
C. C. M. O. Co.	15	4	14	Torrance 37	Torrance
C. C. M. O. Co.	23	4	14	Kettler 11	Torrance
C. C. M. O. Co.	23	4	14	Kettler 12	Torrance
C. C. M. O. Co.	23	4	14	Kettler 13	Torrance
C. C. M. O. Co.	23	4	14	Kettler 16	Torrance
C. C. M. O. Co.	23	4	14	Kettler 15	Torrance
C. C. M. O. Co.	23	4	14	Kettler 14	Torrance
C. C. M. O. Co.	15	4	14	Torrance 43	Torrance
C. C. M. O. Co.	15	4	14	Torrance 42	Torrance
C. C. M. O. Co.	15	4	14	Torrance 41	Torrance
C. C. M. O. Co.	15	4	14	Torrance 40	Torrance
C. C. M. O. Co.	15	4	14	Torrance 39	Torrance
C. C. M. O. Co.	15	4	14	Torrance 38	Torrance
C. C. M. O. Co.	14	4	14	Kettler 7	Torrance
C. C. M. O. Co.	8	4	14	Del Amo 11	Torrance
C. C. M. O. Co.	9	4	14	Del Amo 10	Torrance
C. C. M. O. Co.	14	4	14	Kettler 18	Torrance
C. C. M. O. Co.	14	4	14	Kettler 19	Torrance
C. C. M. O. Co.	23	4	14	Kettler 17	Torrance
C. C. M. O. Co.	3	4	14	Dominguez 2	Torrance
C. C. M. O. Co.	15	4	14	Torrance 50	Torrance
C. C. M. O. Co.	15	4	14	Torrance 55	Torrance
C. C. M. O. Co.	15	4	14	Torrance 46	Torrance
C. C. M. O. Co.	14	4	14	Torrance 51	Torrance
C. C. M. O. Co.	8	4	14	Del Amo 14	Torrance
C. C. M. O. Co.	15	4	14	Torrance 56	Torrance
C. C. M. O. Co.	15	4	14	Torrance 34	Torrance
C. C. M. O. Co.	16	4	14	Del Amo 12	Torrance
C. C. M. O. Co.	16	4	14	Del Amo 13	Torrance
Checot Oil Trust	23	4	14	2	Torrance
Chicksan Oil Co.	23	4	14	1	Torrance
Chicksan Oil Co.	23	4	14	2	Torrance
Consolidated Mutual Oil Co.	23	4	14	5	Torrance
Consolidated Mutual Oil Co.	30	4	13	1	Torrance
Jack E. F. Darnell	23	4	14	1	Torrance
Empire Development Co.	30	4	13	1	Torrance
Herman Fisher	23	4	14	1	Torrance
Fisher Gregg Cooperative	23	4	14	1	Torrance
W. H. Ford	23	4	14	1	Torrance
Fortuna Oil Co. Inc.	23	4	14	Clark 2	Torrance
Fullerton Oil Co.	8	4	14	Waddell 4	Torrance
Fullerton Oil Co.	9	4	14	Lenz 2	Torrance
Fullerton Oil Co.	16	4	14	Cotton 1	Torrance
General Petroleum Corp.	8	4	14	Carson 3	Torrance
George F. Getty	14	4	14	Torrance 17	Torrance
George F. Getty	14	4	14	Torrance 19	Torrance

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES COUNTY—Continued:					
George F. Getty	14	4	14	Torrance 18	Torrance
George F. Getty	14	4	14	Torrance 20	Torrance
George F. Getty	23	4	14	Torrance 21	Torrance
George F. Getty	15	4	14	Torrance 6-A	Torrance
George F. Getty	14	4	14	Torrance 14-A	Torrance
George F. Getty	23	4	14	Torrance 22	Torrance
George F. Getty	8	4	14	Torrance 23	Torrance
B. Gildner	23	4	14	1	Torrance
Hackworth & Brunwin	23	4	14	McGovern 1	Torrance
International Drilling and Eng. Co.	23	4	14	2	Torrance
International Drilling and Eng. Co.	23	4	14	3	Torrance
International Drilling and Eng. Co.	23	4	14	4	Torrance
E. E. Jennings	23	4	14	Rhoads 1	Torrance
E. E. Jennings	23	4	14	Scott 1	Torrance
Keefe Risden Co.	23	4	14	2	Torrance
Bernard Le Mohn	13	4	14	2	Torrance
Leonard Wells, Inc.	23	4	14	12	Torrance
McKeon Drilling Co.	23	4	14	2	Torrance
J. F. McMahon	23	4	14	2	Torrance
E. J. Miley	24	4	14	Torrance 2	Torrance
E. J. Miley	24	4	14	Torrance 1	Torrance
E. J. Miley	24	4	14	Torrance 1-A	Torrance
E. J. Miley	24	4	14	Torrance 3	Torrance
E. J. Miley	24	4	14	Torrance 6	Torrance
E. J. Miley	24	4	14	Torrance 5	Torrance
E. J. Miley	24	4	14	Torrance 4	Torrance
Mohawk Oil Co.	14	4	14	1	Torrance
Native Petroleum Corp.	23	4	14	1	Torrance
Cullen E. Nye	14	4	14	1	Torrance
Pan American Petroleum Co.	24	4	14	Thomas 1	Torrance
Pan American Petroleum Co.	24	4	14	Thomas 2	Torrance
Pan American Petroleum Co.	24	4	14	Knape 1	Torrance
Pan American Petroleum Co.	24	4	14	Sloan 1	Torrance
Pan American Petroleum Co.	24	4	14	Hub 1	Torrance
Pan American Petroleum Co.	24	4	14	House 1	Torrance
Petroleum Midway Co. Ltd.	23	4	14	Stoddard 1	Torrance
Petroleum Midway Co. Ltd.	23	4	14	Ford 1	Torrance
Petroleum Midway Co. Ltd.	23	4	14	Young One 1	Torrance
Petroleum Midway Co. Ltd.	23	4	14	Dudley 1	Torrance
Petroleum Midway Co. Ltd.	22	4	14	Wilson Com. 8	Torrance
Petroleum Midway Co. Ltd.	23	4	14	Barrow Com. 1	Torrance
Petroleum Midway Co. Ltd.	24	4	14	Logan 1	Torrance
Petroleum Midway Co. Ltd.	15	4	14	Stock Com. 3	Torrance
Petroleum Midway Co. Ltd.	23	4	14	Deitrick 3	Torrance
Petroleum Midway Co. Ltd.	23	4	14	Young One 2	Torrance
Petroleum Midway Co. Ltd.	23	4	14	Lord 1	Torrance
Petroleum Midway Co. Ltd.	23	4	14	Eyster 1	Torrance
Petroleum Midway Co. Ltd.	23	4	14	Gannon 1	Torrance
Petroleum Midway Co. Ltd.	23	4	14	Dudley 2	Torrance
Petroleum Midway Co. Ltd.	9	4	14	Casad 2	Torrance
Petroleum Midway Co. Ltd.	8	4	14	Gish 3	Torrance
Petroleum Midway Co. Ltd.	5	4	14	Redondo Im. Co. 1	Torrance
Petroleum Midway Co. Ltd.	5	4	14	Crocker Com. 1	Torrance
Petroleum Midway Co. Ltd.	23	4	14	Deitrick 2	Torrance
Petroleum Midway Co. Ltd.	9	4	14	Craven Com. 1-A	Torrance
Petroleum Securities Co.	15	4	14	11	Torrance
Petroleum Securities Co.	15	4	14	28	Torrance
Petroleum Securities Co.	15	4	14	27	Torrance
Petroleum Securities Co.	15	4	14	15	Torrance
Petroleum Securities Co.	15	4	14	20	Torrance
Petroleum Securities Co.	15	4	14	24	Torrance
Petroleum Securities Co.	15	4	14	19	Torrance
Petroleum Securities Co.	15	4	14	12	Torrance
Petroleum Securities Co.	15	4	14	16	Torrance
Petroleum Securities Co.	15	4	14	23	Torrance
Petroleum Securities Co.	15	4	14	25	Torrance
Petroleum Securities Co.	15	4	14	26	Torrance
Petroleum Securities Co.	15	4	14	22	Torrance
Petroleum Securities Co.	15	4	14	21	Torrance
Petroleum Securities Co.	15	4	14	13	Torrance
Petroleum Securities Co.	15	4	14	14	Torrance
Petroleum Securities Co.	15	4	14	17	Torrance
D. F. Peyton	23	4	14	1	Torrance
R-K Drilling Co.	23	4	14	Martner 1	Torrance
Ring Petroleum Corp.	23	4	14	2	Torrance
Rogers & Edwards	23	4	14	Equitable 1	Torrance
Seaboard Petroleum Co.	23	4	14	McIntyre 1	Torrance
Seaboard Petroleum Co.	23	4	14	McIntyre 2	Torrance
Selby & Root Co.	23	4	14	4	Torrance
Selby & Root Co.	23	4	14	6	Torrance

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES COUNTY—Continued:					
Selby & Root Co.	23	4	14	7	Torrance
Sentinel Oil Co.	24	4	14	Joughin 3	Torrance
Sentinel Oil Co.	24	4	14	Joughin 4	Torrance
Sentinel Oil Co.	24	4	14	Joughin 5	Torrance
Sentinel Oil Co.	24	4	14	Joughin 7	Torrance
Sentinel Oil Co.	24	4	14	Joughin 6	Torrance
Shell Co.	24	4	14	Kettler 1	Torrance
Shell Co.	24	4	14	March 3	Torrance
Shell Co.	24	4	14	March 1-A	Torrance
Shell Co.	24	4	14	March 4	Torrance
Shell Co.	23	4	14	Kettler 2	Torrance
Shell Co.	23	4	14	Kettler 4	Torrance
Shell Co.	23	4	14	Kettler 5	Torrance
Shell Co.	23	4	14	Kettler 3	Torrance
Shell Co.	23	4	14	Kettler 6	Torrance
Shell Co.	23	4	14	Kettler 7	Torrance
Shell Co.	23	4	14	Kettler 8	Torrance
Shell Co.	23	4	14	Kettler 9	Torrance
Shell Co.	23	4	14	Kettler 10	Torrance
Shell Co.	24	4	14	March 5	Torrance
Shell Co.	20	4	13	Dolores 1	Torrance
Shell Co.	24	4	14	Bluemle 2	Torrance
Shell Co.	24	4	14	Bluemle 1	Torrance
Shell Co.	8	4	14	Redondo Com. 2	Torrance
Standard Oil Co.	13	4	14	Dominguez 3	Torrance
Standard Oil Co.	13	4	14	Interstate 1	Torrance
Standard Oil Co.	24	4	14	Interstate 2	Torrance
Standard Oil Co.	15	4	14	Marble Lease 1	Torrance
Standard Oil Co.	15	4	14	Marble Lease 2	Torrance
Standard Oil Co.	13	4	14	Dominguez 2	Torrance
Standard Oil Co.	15	4	14	Marble Fee 1	Torrance
Standard Oil Co.	15	4	14	Marble Fee 2	Torrance
Standard Oil Co.	15	4	14	Marble Fee 3	Torrance
Standard Oil Co.	15	4	14	Marble Lease 6	Torrance
Standard Oil Co.	22	4	14	Marble Lease 5	Torrance
Standard Oil Co.	15	4	14	Marble Fee 5	Torrance
Standard Oil Co.	15	4	14	Marble Fee 6	Torrance
Standard Oil Co.	15	4	14	Marble Fee 4	Torrance
Standard Oil Co.	22	4	14	Marble Lease 4	Torrance
Standard Oil Co.	23	4	14	Interstate 5	Torrance
Standard Oil Co.	14	4	14	Interstate 3	Torrance
Standard Oil Co.	14	4	14	Interstate 4	Torrance
Standard Oil Co.	14	4	14	Interstate 6	Torrance
Standard Oil Co.	14	4	14	Interstate 7	Torrance
Standard Oil Co.	15	4	14	Marble Fee 7	Torrance
Standard Oil Co.	16	4	14	Ellinwood 1	Torrance
Standard Oil Co.	15	4	14	Marble Fee 14	Torrance
Standard Oil Co.	22	4	14	Weston 1	Torrance
Superior Oil Co.	24	4	14	Torrance 15	Torrance
Superior Oil Co.	24	4	14	Torrance 16	Torrance
Superior Oil Co.	24	4	14	Torrance 17	Torrance
Superior Oil Co.	24	4	14	Torrance 21	Torrance
Superior Oil Co.	24	4	14	Torrance 18	Torrance
Superior Oil Co.	19	4	13	Torrance 20	Torrance
Superior Oil Co.	24	4	14	Torrance 19	Torrance
Superior Oil Co.	24	4	14	Torrance 22	Torrance
Superior Oil Co.	24	4	14	Torrance 23	Torrance
Superior Oil Co.	24	4	14	Torrance 24	Torrance
Superior Oil Co.	24	4	14	Torrance 25	Torrance
Superior Oil Co.	24	4	14	Torrance 26	Torrance
Superior Oil Co.	24	4	14	Torrance 27	Torrance
Superior Oil Co.	24	4	14	Torrance 30	Torrance
Union Drilling & Petroleum Co.	23	4	14	Perkins 1	Torrance
United States Royalties Co.	23	4	14	21	Torrance
United States Royalties Co.	23	4	14	22	Torrance
Standard Oil Co.	15	4	14	Marble Lease 3	Torrance
United States Royalties Co.	23	4	14	20	Torrance
United States Royalties Co.	10	4	14	16-A	Torrance
United States Royalties Co.	10	4	14	17	Torrance
Universal Consolidated Oil Co.	23	4	14	Jones 2	Torrance
Van Alen Oil Co.	23	4	14	4	Torrance
Van Alen Oil Co.	22	4	14	6	Torrance
Westland Oil, Inc.	23	4	14	1	Torrance
Westland Oil, Inc.	23	4	14	2	Torrance
Henry S. Woolner	14	4	14	Woolner 1	Torrance
Mohawk Oil Co.	16	2	11	Denny 1	Whittier
Montijo & Johnson	17	2	11	Clark 1	Whittier
Petroleum Midway Co. Ltd.	17	2	11	Rideout-Hamburg 1	Whittier
Petroleum Midway Co. Ltd.	17	2	11	Seward-Rideout 1	Whittier
Petroleum Midway Co. Ltd.	17	2	11	Witte-Vinning 1	Whittier

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES COUNTY—Continued:					
Standard Oil Co.	17	2	11	Patten 1	Whittier
Whitley Oil & Refining Co.	17	2	11	9	Whittier
Standard Oil Co.	22	2	11	Home 21	Whittier
Fortuna Oil Co. Inc.	18	3	14	Fortuna 1	----------
Hermosa Syn.	30	3	14	1	----------
Lynwood Cons. Oil Interests, Inc.	11	3	13	1	----------
Oak Ridge Oil Co.	22	2	12	K-B 1	----------
Oak Ridge Oil Co.	28	2	12	Gage 1	----------
Oak Ridge Oil Co.	22	2	12	Ogden 1	----------
Selby & Root Co.	23	4	14	5	----------
Shell Co.	11	4	13	Carson 1	----------
Shell Co.	11	5	12	Fred Bixby 1	----------
Shell Co.	30	2	12	Loomis 1	----------
St. Helens Petroleum Co. Ltd.	20	3	13	Rowell 1	----------
Standard Oil Co.	17	2	14	L. A. Investment 1	----------
Standard Oil Co.	35	2	15	L. A. Extens. 1	----------
Superior Oil Co.	9	3	12	Quill 1	----------
Superior Oil Co.	20	3	13	Maxwell Com. 1	----------
ORANGE COUNTY:					
Union Oil Co.	13	3	10	G. & L. 56	Coyote Hills
Associated Oil Co.	2	6	11	Wardlow 1	Huntington Beach
Globe Petroleum Corp.	13	6	11	Judd 1	Huntington Beach
Miley-Keck Oil Co.	2	6	11	46	Huntington Beach
Standard Oil Co.	13	6	11	Surf 4	Huntington Beach
Standard Oil Co.	2	6	11	Hunt. B. 23	Huntington Beach
Standard Oil Co.	3	6	11	Hunt. A. 23	Huntington Beach
Standard Oil Co.	13	6	11	Gisler 2	Huntington Beach
Standard Oil Co.	11	6	11	Hunt. E. 8	Huntington Beach
Standard Oil Co.	4	6	11	Hunt. B. 25	Huntington Beach
Winters Club	23	5	11	Club 1	Huntington Beach
Pasadena Oil Co.	28	6	10	1	Newport
Petroleum Midway Co. Ltd.	29	3	9	Yarnell 17	Richfield
E. J. Miley	17	4	10	1	----------
O'Donnell Oil Syn.	20	6	10	Macklin 1	----------
Olive-Ventura Oil Corp.	9	4	9	1	----------
SAN BENITO COUNTY:					
Petroleum Midway Co. Ltd.	10	12	4	1	----------
SAN BERNARDINO COUNTY:					
B. & G. Development Co.	34	1	8	Bruce 1	----------
C. S. Summar	11	2	8	1	----------
SAN DIEGO COUNTY:					
National City Oil Co.	22	18	2	1	----------
SAN LUIS OBISPO COUNTY:					
Panorama Oil Co.	7	31	21	Panorama 1	----------
SANTA CRUZ COUNTY:					
Santa Cruz Laveaga Trust Oil Co.	5	11	1	1	----------
United Royalties Co.	Hughes Tract			1	----------
STANISLAUS COUNTY:					
L. W. Thomas	16	3	13	1	----------
VENTURA COUNTY:					
Calumet Oil Co.	3	3	19	14	Bardsdale
Trinitas Oil Co.	4	1	20	5	Conejo
Crown Oil Co.	7	4	18	Crown A	Piru
Piru Petroleum Co.	32	4	18	2	Piru
Ten Friends Oil Co.	18	4	18	2	Piru
H. A. Ivers	1	4	20	7	Sespe
R. F. Labonge	1	4	20	11	Sespe
Oak Ridge Oil Co.	13	3	21	Harvey 13	South Mountain
Associated Oil Co.	27	3	23	Lloyd 12	Ventura
Associated Oil Co.	27	3	23	Lloyd 10	Ventura
Associated Oil Co.	28	3	23	Lloyd 14	Ventura
R. L. Hinckley	33	4	23	17	Ventura
Alexander Drilling Co.	5	2	17	1	----------
Wm. G. Helis	36	2	19	1	----------
YOLO COUNTY:					
Divide Ridge Oil Co.	8	8	1	1	----------

SPECIAL ARTICLES.

Detailed technical reports on special subjects, the result of research work or extended field investigations, will continue to be issued as separate bulletins by the Bureau, as has been the custom in the past.

Shorter and less elaborate technical papers and articles by members of the staff and others are published in each number of 'Mining in California.'

It is anticipated that these special articles will cover a wide range of subjects both of historical and current interest; descriptions of new processes, or metallurgical and industrial plants, new mineral occurrences, and interesting geological formations, as well as articles intended to supply practical and timely information on the problems of the prospector and miner, such as the text of new laws and official regulations and notices affecting the mineral industry.

OIL AND GAS RIGHTS.

By A. H. Ricketts, of the bar of the Supreme Court of the United States, of California and of Nevada.

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Part I.

ADJUDICATED TERMS AND PHRASES.

§ 1. As Long as Gas or Oil is Found in Paying Quantities.

The term, "as long as gas or oil is found in paying quantities" means, not merely that those minerals shall be found in paying quantities, but also that either oil or gas shall actually be discovered and produced in paying quantities within the term named in the lease, and if neither oil nor gas is being produced at the end of the term of years named in the lease, the lease ends.[1]

§ 2. Casing Line.

A casing line is a large, strong rope used in oil-well drilling to raise and lower the casing.[2]

§ 3. Commencing Operations.

To commence operations is the performance of some act which has a tendency to produce an intended result.[3]

§ 4. Completed Well.

The term "completed" as used in a lease means finished or sunk to the depth necessary to find oil or gas in paying quantities, or to such a depth as in the absence of such oil or gas would reasonably preclude the probability of finding oil or gas at a further depth. It can not be construed to mean that the lessee bound himself, under penalty of for-

[1] Union Co. vs. Adkins, 278 Fed. 854.
[2] Long vs. Foley, 82 W. Va. 502, 96 S. E. 794.
[3] Flemming Co. vs. South Penn Co., 37 W. Va. 645; 17 S. E. 203; Terry vs. Texas Co., Tex. C. A., 228 S. W. 1019; Duffield vs. Russell, 13 Ohio C. C. 266; see Henderson vs. Ferrell, 183 Pa. St. 547, 38 Atl. 1018; and see Henning vs. Wichita Co., 100 Kan. 255, 164 Pac. 297.

feiture, to sink a producing well or in the absence of oil or gas to bore through to China.[4]

§ 5. Diligence.

To prosecute drilling with due diligence to success or abandonment means, that there must be a product capable of division between the parties in the proportions mentioned in the lease. Unless this is done, drilling is not prosecuted to success.[5] The rule is that whatever, under the circumstances, would be reasonably expected of operators of ordinary prudence, having regard to the interest of both lessor and lessee, is what is required.[6]

§ 6. Fixtures.

A fixture is an article which may or may not actually be affixed to the freehold.[7] Engines, boilers, hoisting works, mills, pumps, electric hoist firmly bolted to the substructure upon which it rests, the superstructure and engine house sufficiently affixed to the soil for mining purposes, a gallows frame together with the gallows, hoist and transformer forming integral parts of one mechanism are fixtures.[8] So, a boiler and smokestack, derrick, belt house, calf and bull wheels, rig irons, drilling tools, bunkhouse and oil well casing affixed to the land

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[4] Frost vs. Martin, — Tex. C. A. —, 203 S. W. 72. The term "completion of well" for the purpose of operating and testing of the amount of production, as used in a drilling contract, means the clearing of the well after reaching the specified depth, so that the sand reached may give that flow of production, by its own force or by pumping, which would result from a well so prepared in the ordinary and usual manner for making preparation for such test. Twin States Co. vs. Westerly Co., — Okla. —, 220 Pac. 839; see Parish vs. Bridgewater Co., 51 W. Va. 558, 42 S. E. 655. In Chapman vs. Ellis, — Tex. C. A. —, 254 S. W. 616, it is said that the word "completed" is ambiguous, and where ambiguity in the terms of a contract exists, the testimony of experts in matters of the kind called for in the contract is admissible to explain the ambiguity. That a well may not be completed until it is "shot," see Uncle Sam Co. vs. Richards, 76 Okla. 277, 175 Pac. 749. In Unity Oil Co. vs. Hill, — Ky. —, 255 S. W. 151, the well was cased, and showed what was called a "rainbow of oil." It was not shot and was not a producing well; that is, one from which oil in profitable quantities could be taken. It was contended that it was not a completed well within the terms of the contract since it was not shot. It was not shown that the evidence of oil was such as to indicate to a reasonably prudent man that the shooting of the well would result in the production of oil. There was not a pipe line close enough to justify shooting at that time. It was held that in view of the evidence as to the prospects of oil it was not necessary to shoot the well or that the shooting of it could reasonably be expected to make it a producing well; see, also, Rice vs. Ege, 42 Fed. 661. It will be deemed "completed" when the contract depth is reached. Key vs. Big Sandy Co., — Tex. C. A. —, 212 S. W. 300.

[5] Kennedy vs. Crawford, 138 Pa. St. 561, 21 Atl. 19.

[6] Eastern Oil Co. vs. Beatty, — Okla. —, 177 Pac. 104; see Hall vs. South Penn Co., 71 W. Va. 82, 76 S. E. 124. That there may be a too strenuous as well as a too dilatory operation see Wellsville Oil Co. vs. Miller, 44 Okla. 493, 145 Pac. 344.

[7] Merritt vs. Judd, 14 Cal. 59; Watterson vs. Cruse, 179 Cal. 379, 176 Pac. 870; Breyfogle vs. Tighe, 58 Cal. A. 306, 107 Pac. 1036; Conde vs. Sweeney, 16 Cal. A. 157, 116 Pac. 319; Washburn vs. Inter-Mt. Co., 56 Or. 578, 109 Pac. 382; see Midland Oil Co. vs. Rudneck, 188 Cal. 265, 204 Pac. 174. A chattel will remain such although attached to the realty when it is the subject of a conditional sale. Arnold vs. Goldfield Co., 32 Nev. 447, 109 Pac. 718; Montana Co. vs. Northern Valley Co., 51 Mont. 266, 153 Pac. 1017.

[8] Arnold vs. Goldfield Co., *supra* [7]; see Mammoth Co. vs. Juab County, 10 Utah 232, 170 Pac. 78.

become a part of the realty.[9] By legislative enactment in several of the mining states all machinery or tools used in working or developing a mine, whether they are attached to it or not, are to be deemed affixed to the mine.[10] It is immaterial whether the fixtures be attached to property held by an invalid,[11] a possessory or a fee-simple title.[12]

§ 7. Gasoline.

Gasoline is a colorless, inflammable fluid, the first and highest distillant of crude oil, is extracted from it by distillation; and being the most volatile compound of petroleum, it readily separates from it and in the process of distillation is the oil drawn off at the lowest temperature.[13]

§ 8. Gas Well.

The words "gas well" used in an oil lease mean a well having such a pressure and volume of gas, taking into account its proximity to market, as could be operated profitably and the gas utilized or disposed of commercially.[14]

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[9] Conde vs. Sweeney, *supra* (7); Son vs. Adamson, 34 Cal. A. D. 1046. Compare Cortelyou vs. Baker, 185 Cal. 168, 187 Pac. 417. As to mining fixtures on withdrawn land see Son vs. Adamson, 188 Cal. 99, 204 Pac. 392; Midland Oil Co. vs. Rudneck, *supra* (7). Under a lease giving the right to remove any and all buildings and machinery from the leased premises within a reasonable time after the termination of the lease, any property placed on the premises by the lessee remains personal property and does not become a fixture, though actually affixed to the soil. Cowgill vs. Little Persimmon Co., — Mo. A. —, 183 S. W. 346; see McClendon vs. Busch-Everett Co., 138 La. 722, 70 So. 781. In Patton vs. Woodrow, 198 Ky. 85, 248 S. W. 226, it is said: "The general rule requires the lessee for oil and gas purposes to remove all fixtures and machinery placed on the premises during the term of the lease, or at least within a reasonable time thereafter. If this is not done, the fixtures and machinery become the property of the lessor, and he may enjoin their removal; if severed from the freehold and then removed without his consent, he may replevin them, or recover their value in an action for damages. This is true where the lessee expressly reserved the right to remove them." See, also, Monarch Co. vs. Hunt, 193 Ky. 315, 235 S. W. 772; Shellar vs. Shivers, 171 Pa. St. 569, 33 Atl. 95.

[10] Malone vs. Big Flat Co., 76 Cal. 583, 18 Pac. 772; Britannia Co. vs. U. S. Co., 43 Mont. 93, 115 Pac. 46; see Hamilton vs. Delhi Co., 118 Cal. 153, 50 Pac. 378. In California sluice boxes, flumes, hose, pipes, railway tracks, cars, blacksmith shops, mills and all other machinery or tools used in working or developing a mine, are deemed to be affixed to the mine. Sec. 661, Civil Code. In Cortelyou vs. Baker, *supra* (9), the court said: "The kind of property therein disclosed shows that it was intended to apply to a mine in the ordinary meaning of the term, such as a quartz or placer mine. While the development and production of petroleum is for some purposes classed as mining (Miller vs. Chrisman, 140 Cal. 440, 73 Pac. 108, 74 Pac. 441), we think this section was not intended to apply to oil operations."

[11] Watterson vs. Cruse, *supra* (7); Son vs. Adamson, *supra* (9).

[12] Merritt vs. Judd, *supra* (7); Roseville Co. vs. Iowa Co., 15 Colo. 29, 24 Pac. 920. The authorities clearly distinguish between the word "improvements" and the word "fixtures," holding that under the former term much will pass which would be excluded under the latter. Where the contract provides that the owner shall retake possession upon default the term "improvements" would seem to mean improvements of the realty; that is to say, such things as are placed thereon by the way of betterment which are of a permanent nature and which add to the value of the property. This would include buildings and structures of every kind; and also such machinery as was placed thereon of a permanent nature and which tended to increase the value of the property for the purpose for which it was used. Much can pass thereunder which, strictly speaking, can not be denominated fixtures and which in the absence of such a condition might be taken away. Siegloch vs. Iroquois Co., 106 Wash. 632, 181 Pac. 51; see, also, Conde vs. Sweeney, *supra* (7); and see American Fork Co., 291 Fed. 746. The object in placing machinery and fixtures on the land is to enable the lessees to develop the leased property. It is for the benefit of the lessees, and not to enhance the value of the land by permanent improvements thereon. Engines, derricks, oil tanks, casing and pipes are not permanent fixtures, nor parts of the freehold, and do not, upon the forfeiture or other termination of the lease, necessarily vest in the lessor. Gartland vs. Hickman, 56 W. Va. 85, 49 S. E. 14.

[13] Locke vs. Russell, 75 W. Va. 602, 84 S. E. 498; Bubb vs. Parker Co., 252 Pa. St. 26, 97 Atl. 114; see Hammett Co. vs. Gypsy Co. — Okla. —, 218 Pac. 501. Casing head gas is a component part of oil. It is not made from dry gas. It is a product of wet gas which exists only with oil. Twin Hills Co. vs. Bradford Corporation, 264 Fed. 440. For a case involving the method of manufacturing gasoline from casing head gas, see Hammett Co. vs. Gypsy Co., *supra*.

[14] Prichard vs. Freeland Co., 80 W. Va. 787, 84 S. E. 945; see Hammett Co. vs. Gypsy Co., *supra* (13).

§ 9. Good Clean Hole.

As applied to oil well drilling a "good clean hole" is one free from those things the presence of which would render the well incapable of use as a well.[15]

§ 10. Kill.

The word "kill" as applied to an oil or gas well means to shut off the flow of oil or gas temporarily or to destroy the well entirely so that neither oil nor gas can flow.[16]

§ 11. Minerals Ferae Naturae.

Water and oil, and still more gas, may be classed as "minerals *ferae naturae*."[17]

§ 12. Natural Gas.

Natural gas is a fluid mineral substance, subterraneous in its origin and location, possessing in a restricted degree the properties of underground waters, and resembling water in some of its habits. Unlike water it is not generally distributed. Its physical occurrence is in limited quantities only within circumscribed areas of greater or less extent. But the difference between natural gas and underground waters, whether flowing in channels or percolating the earth, is so marked that the principles which the courts apply to questions relating to the latter are not adapted to the adjustment of the difficulties arising from conflicting interests in the former.[18]

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[15] Bain vs. White, 256 Fed. 432. A contract to drill an oil well provided that it should be completed to a certain prescribed depth and "shall be a good, clean hole." When the well reached the contracted depth a piece of pipe had been left in such condition that either the withdrawal of the drill stem or the mere lapse of a short period of time would result in the hole being obstructed by the pipe. By a "good, clean hole" is not to be understood one which is free from mud, but one which is free from those things which would render the hole incapable of the uses for which it was designed. Under these circumstances when the well was tendered by the driller for measurement the conditions were such that it did not meet the requirements of the contract. Bain vs. White, *supra;* see Gates vs. Little Fay Co., 105 Kan. 191, 182 Pac. 184.

[16] Department vs. Louisiana Co., 144 La. 962, 181 So. 454.

[17] Jones vs. Forest Co., 194 Pa. St. 379, 44 Atl. 1074; see Manufacturers' Co. vs. Indiana Co., 155 Ind. 545, 58 N. E. 851. For a discussion of the analogy between animals *ferae naturae* and mineral deposits of oil and gas, see Ohio Oil Co. vs. State, 177 U. S. 190; Dunlap vs. Jackson, — Okla. —, 219 Pac. 314.

[18] Manufacturing Co. vs. Indiana Co., *supra* [17]. Natural gas is found at pronounced depths in porous strata—usually sand rock—constituting a natural reservoir and is brought to the surface and reduced to possession through wells drilled into the containing strata. When a surface owner reduces it to possession he becomes its owner and it becomes a subject of commerce, like any product of the forest, field or mine. Penn. vs. W. Virginia, 262 U. S. 586; City of Erie vs. Public Service Com., — Pa. St. —, 123 Atl. 475. Natural gas is a commodity as much so as coal, and like coal it is a fuel and as such is used for domestic and industrial purposes. It is a subject marketable, either within the state wherein it is produced or in the state to which it is transported. Suttle vs. Hope, 82 W. Va., 729, 97 S. E. 429. Natural gas is land. Haskell vs. Sutton, 53 W. Va. 206, 44 S. E. 533; Reynolds vs. Whitescarver, 66 W. Va. 392, 66 S. E. 518. The owner of the land owns everything that goes to make up the realty. Natural gas beneath the surface is a part of the realty and the owner of the land is the owner of the gas. By reason of the fugitive character of natural gas the landowner is the owner of the gas only in a qualified sense. He owns it only while it remains beneath the surface of his land. If by its natural tendency to flow it escapes to the lands of an adjoining proprietor such ownership then ceases. But this qualified ownership in the gas authorizes the owner of the land to reduce it to possession by sinking wells upon his own land and thus permit it by natural means or its own ordinary pressure to flow to the surface and into a receptacle he may prepare to receive the same. When thus reduced to possession through a well and regardless of whether it came from beneath his own land or remotely from the lands of an adjoining proprietor, the natural gas becomes personal property, the absolute ownership of which is in the owner of the land upon which it is produced. Fairbanks vs. Warrum, 56 Ind. A. 337, 86 S. E. 883. Operations for gas can not be measured by the same rule applied in the same manner as in the case of operations for oil. The peculiar characteristics of the business of producing and transporting gas being such as to distinguish it for some purposes from operations for oil. McKnight vs. Manufacturing Co., 146 Pa. St. 185, 23 Atl. 164. The rule of property right in natural gas and oil in all the states save Indiana is stated in Brown vs. Spilman, 155 U. S. 665; see Gas Co. vs. Rankin, 68 Mont. 372, 207 Pac. 998.

§ 13. Net Profits and Net Proceeds.

An oil and gas lease provided that the net profits were to be determined by deduction from the gross income only the royalties and operating expenses, as distinguished and considered apart from "capital expenses." A modifying clause providing for a change in the payment of royalty based on the "net proceeds" provided for in the modifying clause was not dependent upon the cost of capitalization but only upon the sum total of royalties and operating expenses and in estimating the net proceeds the lessee could not deduct capital expenses in addition to operating expenses.[19]

§ 14. Oil.

The word "oil" as used in an oil and gas lease, has always been referred to by the courts and understood to designate the oil produced from a well, or crude petroleum in its natural state.[20]

§ 15. Oil and Gas.

Oil and gas are minerals, and in their places are real estate and part of the land.[21]

§ 16. Oil as Personal Property.

Oil in place is a part of the land in which it is found or from which it is obtained, but when brought to the surface or reduced to possession, it ceases to be real estate and becomes personal property, and as such may be subject to partition among its joint owners.[22]

§ 17. Oil Operations.

The courts take judicial notice of the fact that oil and natural gas are mined by means of deep wells drilled into the earth.[23]

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[19] Nathan vs. Porter, 36 Cal. A. 356, 172 Pac. 170. The word "profits" signifies an excess of the value of advances, People vs. Savings Union, 72 Cal. 199, 130 Pac. 887, or as the word is defined in Connolly vs. Davidson, 15 Minn. 519, it means the excess of receipts over expenditures; or, in Eyster vs. Centennial Board, 94 U. S. 500, it is the receipts of a business deducting current expenses; it is the equivalent to net receipts; see, also, Blanck vs. Pioneer Co., 93 Wash. 26, 159 Pac. 1077.

[20] Hammett Co. vs. Gypsy Co., *supra* [13]. Oil shale is a valuable mineral deposit and a source of petroleum oil. Reed vs. Doyle, 47 L. D. 548; see, also, McCombs vs. Stephenson, 154 Ala. 109, 44 So. 867; Dean vs. Wyoming Co., 21 Wyo. 133, 128 Pac. 881.

[21] Kennedy vs. Hicks, 180 Ky. 562, 203 S. W. 318; McKinney vs. C. K. G. Co., 134 Ky. 239, 120 S. W. 314; DeMoss vs. Sample, 143 La. 243, 78 So. 482; Rich vs. Doneghey, — Okla. —, 177 Pac. 86; see, also, Daughetee vs. Ohio Co., 263 Ill. 518, 105 N. E. 308. Oil and gas within the ground are minerals. The fact that they have attributes not common to other minerals because of their fugitive nature or vagrant habits, and the disposition to percolate, and the possibility of their escape from beneath one part of the surface to another, does not remove them from the class of minerals. Texas Co. vs. Daugherty, 107 Tex. C. A., 176 S. W. 719; see, also, United Co. vs. Meredith, — Tex. C. A. —, 258 S. W. 550. But oil and gas are not synonymous terms. A lease of oil does not embrace the right to take the gas and vice versa. While they usually are found together, or near to each other in the same strata, though not always so, they are regarded as separate minerals, or mineral substances. Of course either would be a proper subject of reservation in a lease of the land. Murphy vs. Van Voorhis, — W. Va. —, 119 S. E. 297; see, also, Arnold vs. Garnett, 103 Kan. 477, 174 Pac. 1027; Palmer vs. Truby, 136 Pa. St. 563, 20 Atl. 516. Oil and gas are furtive, migratory and self-transmissive minerals, and because of these characteristics or qualities contracts and rights relating thereto require the application of principles different in many respects from those applicable to other minerals that are not affected with such characteristics. Reckard vs. Cowley, 202 Ala. 337, 80 So. 419; see Kimbley vs. Luckey, 72 Okla. —, 179 Pac. 928.

[22] Warren vs. Boggs, 83 W. Va. 89, 97 S. E. 589; see, also, Kimbley vs. Luckey, *supra* [21].

[23] Kemp vs. Barr Co., 103 Kan. 595, 175 Pac. 988. Nothing is more uncertain than the production of oil wells and any representation as to future production is a mere expression of opinion as to exploitation and probabilities and will not constitute fraud even though it should turn out to be untrue. Engemann vs. Allan, — Ky. —, 257 S. W. 25; see, also, Cooper vs. Gastliger, — Pa. St. —, 123 Atl. 506.

§ 18. Oil Seepage.

While it is possible that at times oil may be found issuing from the surface of the ground, known in practice as seepage, in which case discovery may be made without difficulty or expense, it is a matter of common knowledge that almost always drilling is essential to such discovery, and in many sections drilling to a great depth, involving heavy cost.[24]

§ 19. Oil Territory.

Oil territory does not necessarily imply a real issue of fact as the phrase has no fixed nor well-recognized meaning and may well be used in one sense and understood in another. But it may mean territory where the observable geological conditions are such as to justify expenditures in prospecting by those who are able to take the chance.[25]

§ 20. Oil Well.

An oil well is a "mine."[26]

§ 21. One-Eighth.

An instrument conveying the oil and gas under certain land but reserving title to one-eighth of the oil and gas is a covenant running with the land.[27]

§ 22. Original Package.

The term "original package" properly is applied to natural gas transported by pipe lines.[28]

§ 23. Paying Quantities.

The phrase "paying quantity" is to be construed with reference to

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[24] Con. Mutual Oil Co. vs. U. S., 245 Fed. 525; see Nevada Sierra Co. vs. Home Oil Co., 98 Fed. 673; Butte Oil Co., 40 L. D. 602; Miller vs. Chrisman, *supra* (10); Bay vs. Oklahoma Co., 13 Okla. 425, 73 Pac. 963.

[25] S. P. Co. vs. U. S., 249 Fed. 786. Oil fields become definitely defined by boundaries established through the exploration of operators so that those who are engaged in operating or speculating with reference to them rely upon the defined area as a known fact. The expression "proven territory" has a fixed meaning in the business. It means territory so situated with reference to known producing wells as to establish the general opinion that, because of its location in relation to them, oil is contained in it. Of course, no particular area can be known to contain oil until the wells actually are drilled and the oil thus is discovered. Such are the uncertainty, irregularity, and elusiveness which characterize the deposit of oil lying beneath the surface in the average oil field that barren areas are not infrequently found to exist in what is regarded as proved territory. Minchew vs. Morris, — Tex. C. A.—, 241 S. W. 215.

[26] Mid-Northern Co. vs. Walker, 65 Mont. 414, 211 Pac. 353; see Burke vs. S. P. R. Co., 234 U. S. 907; Escott vs. Crescent City Co., 56 Or. 190, 106 Pac. 452. But see Hollingsworth vs. Berry, 107 Kan. 544, 192 Pac. 763; J. M. Guffey Co. vs. Murrel, 127 La. 483, 53 So. 705; Kreps vs. Brady, 37 Okla. 754, 133 Pac. 216; Carter vs. Phillips, 88 Okla. 202, 212 Pac. 747. In the case of J. M. Guffey Co. vs. Murrel, the court said: "A productive oil well or aggregation of them is always universally and invariably known as an 'oil field.' Whoever heard of such being called a mine? If an oil well was a 'mine' in the usual signification of the word, surely sometime, somewhere, some intelligent person would be heard to designate it by that term; but it is never done. Now a 'mining operation' must certainly be something having to do with a mine, and if an oil well is never known in the ordinary and customary use of language as a 'mine' then neither the making nor operating of one could possibly be considered a mining operation in the ordinary signification of the word. He who works in a mine is termed a 'miner,' but no one ever heard of a laborer at an oil well being called a 'miner.' It is shown by the testimony that an oil well is too small for a man to get into, even if such was necessary or desirable, which it is not. We think it absolutely clear that the words 'mine' or 'mining operation' never refer to oil wells or oil production in ordinary parlance."

[27] Pierce Ass'n vs. Woodrum, — Tex. C. A. —, 188 S. W. 245; see Spence vs. Lucas, 138 La. 763, 70 So. 796; and see Con. Arizona Co. vs. Hinchman, 212 Fed. 813.

[28] W. Virginia Co. vs. Towers, 134 Md. 137, 106 Atl. 265; Landon vs. Public Utilities Co., 249 U. S. 236; s. c. 242 Fed. 658, 245 Fed. 950; State vs. Flannelly, 96 Kan. 372, 152 Pac. 22; see 26 A. L. R. 971, note.

the operator, and by his judgment when exercised in good faith.[29] There must also be taken into consideration the distance to market and the expense of marketing in determining whether oil can be marketed at a reasonable profit.[30] This phrase is also defined as meaning in sufficient quantities to pay a reasonable profit on the necessary sum required to be expended, including the cost of drilling, equipment, and operation of the well.[31] It may be defined in a lease, by the parties thereto.[32] As a general rule the determination of the lessee, acting in good faith, is the controlling factor.[33]

§ 24. Rent and Royalty.

In mining leases the words "rent" and "royalty" are used interchangeably to convey the same meaning.[34]

§ 25. Royalty.

The word "royalty" as used in an oil and gas lease, generally refers to a share of the product or profit reserved by the owner for permitting another to use the property.[35] A lease by which the owner or lessor grants to the lessee the privilege of mining and operating the land in consideration of the payment of a certain stipulated royalty on the mineral produced, creates the relation of landlord and tenant and when that relation is created whatever is paid for the occupation and use of the premises, whether it be in money or kind, is equally in substance rent, and under such circumstances the royalties received are rentals.[36]

§ 26. Surface.

The word "surface" in mining controversies means that part of the earth or geologic section lying over the minerals in question, unless otherwise defined by the deed or conveyance. It is not merely the top of the glacial drift, soil, or the agricultural surface. The owner of a

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[29] Young vs. Forest Co., 194 Pa. St. 243, 45 Atl. 121; Summerville vs. Apollo Co., 207 Pa. St. 334, 56 Atl. 876; Manhattan Co. vs. Carrell, 164 Ind. 526, 73 N. E. 1084; Hennessy vs. Junction Oil Co., 75 Okla. 220, 182 Pac. 666; see Tucker vs. Watts, 25 Ohio C. C. 320.

[30] Iams vs. Carnegie Co., 194 Pa. St. 72, 45 Atl. 54.

[31] Keechi Co. vs. Smith, 81 Okla. 267, 198 Pac. 588; see, also, Aycock vs. Paraffine Co., — Tex. C. A. —, 210 S. W. 851; Lowther Co. vs. Miller-Sibley Co., 53 W. Va. 508, 44 S. E. 433; Summerville vs. Apollo Co., *supra*. [29]

[32] McLean vs. Kishi, — Tex. C. A. —, 173 S. W. 502; see Hennessy vs. Junction Oil Co., *supra* [29]; Lowther Co. vs. Miller Co., *supra* [31].

[33] Barbour Co. vs. Tompkins, 81 W. Va. 116, 93 S. E. 1038; Hennessy vs. Junction Oil Co., *supra* [29]; Summerville vs. Apollo Co., *supra* [29]. If a well, being down, pays a profit, even a small one, over the operating expenses, it is producing in "paying quantity," though it may never repay its cost, and the operation as a whole may result in a loss. Few wells, except the very largest, repay cost under a considerable time, and many never do; but that is no reason why the first loss should not be reduced by profits, however small, in continuing to operate. The phrase "paying quantities," therefore, is to be construed with reference to the operator, and by his judgment when exercised in good faith. Young vs. Forest Co., *supra* [29]; Lowther Co. vs. Miller-Sibley Co., *supra* [31]; see Reynolds vs. White Plains Co., — Ky. —, 250 S. W. 975.

[34] Nelson vs. Republic Co., 240 Fed. 293; Campbell vs. Lynch, 81 W. Va. 374, 94 S. E. 739.

[35] Saulsberry vs. Saulsberry, 162 Ky. 486, 172 S. W. 932.

[36] Von Baumbach vs. Sargent Co., 242 U. S. 503. Under an oil and gas contract giving the privilege of drilling and developing the land for oil, until severance takes place, the lessee has no title and on severance and not earlier when the royalty in oil is payable. At that time the oil or gas is personal property after alienation or disposition of which no deed or other solemn instrument of conveyance is necessary. It is personal property in the hands of the lessee. He has bound himself to deliver a portion of it called royalty to the lessor as rent in kind for occupation, use, and operation of the lessor's land. The royalty is a rent susceptible of division as if it were a rent payable in money. While the lease does not actually pass the title to the oil or gas, it confers a right to take it. Where there is a severance of or a partition of the leased lands, the divided tracts go into the hands of their owners subject to such right, whether they are acquired by deed, will, or a decree of partition. Campbell vs. Lynch, *supra* [15].

higher stratum is entitled to the same rights to surface support as the actual surface owner.[37] When the landowner grants the underlying minerals, reserving the surface to himself, his grantee is entitled only to so much of the mineral as he can extract without injury to the superincumbent soil.[38]

§ 27. Test Well.

A test well is one that determines not only the presence of petroleum oil, but its commercial value, considering its abundance and accessibility. The information resulting should be such as a prudent and experienced investor would desire to know before expending his capital in labor, or improvements for the profitable working of the property.[39]

§ 28. Wild Cat Territory.

The term "wild cat territory" is applied to land which is not proven but is thought to be susceptible of development as petroleum oil and natural gas producing land.[40]

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[37] Marquette Co. vs. Ogelsby Co., 253 Fed. 111.

[38] Id., *supra* (37); see Lloyd vs. Catlin Co., 210 Ill. 460, 71 N. E. 335; Coleman vs. Chadwick, 8 Pa. St. 81; Morner vs. Watson, 79 Pa. St. 251; Zinc Co. vs. Franklinite Co., 13 N. J. Eq. 342; Harris vs. Ryding, 5 Mees. & Wel. 59; Smart vs. Morton, 5 Ellis & Black 30; compare Oberly vs. Frick Co., 262 Pa. St. 83; 104 Atl. 864. A lessee of the service has no right under his lease to commit waste by the removal of oil. Isom vs. Rex Crude Oil Co., 147 Cal. 659, 82 Pac. 317.

[39] Petroleum Co. vs. Coal Co., 89 Tenn. 381, 18 S. W. 65; Texas Co. vs. Davis, — Tex. —, 254 S. W. 307. The authorities are uniform that where there is no provision in a lease providing what shall be done if the test well proves dry, there is an implied obligation on the lessee to proceed further with the exploration and development of the land with reasonable diligence according to the usual course of business. A failure to do so amounts to an abandonment, which will sustain a re-entry by the lessor. Aye vs. Philadelphia Co., 193 Pa. St. 451, 44 Atl. 555. An oil and gas lease provided that it should remain in force for the term of one year from its date and as long thereafter as oil or gas is produced from the premises by the lessee; and providing that "if said territory proves to be productive, then the party of the second part to complete this contract shall drill as many as eight wells on said premises, and said wells shall be drilled with due diligence and dispatch having in view the interest of both parties thereto, and so to produce all the oil or gas that may be reasonably produced from said premises." The lessee proceeded immediately and within thirty days drilled a productive well upon the leased premises. It then became his duty to proceed immediately to drill the eight wells as contemplated by the lease. The word "if," as used in the quoted clause, means "when" and the word "then" used in the quoted clause, is an adverb of time and means "at the time," that is, at the time the territory proved productive by drilling of the test well. It was then the duty of the lessee to drill as many as eight wells upon the leased premises and, within a year from the date of the lease, as a condition precedent to the extension of the lease beyond the term of one year. Whether such wells were by the lessee drilled with due diligence and dispatch, having in view the interest of both parties to the lease, and so as to produce all the oil and gas that may reasonably be produced from the premises as required by the lease, is a question of fact to be determined in connection with all the circumstances attending the operations. The fact that a test well was profitable and that there was, at its conclusion, a profitable market, make the failure of the lessee to drill as many as eight wells with due diligence sufficient ground for the forfeiture of the lease on the part of the lessor. Paraffine Oil Co. vs. Cruce, 63 Okla. 95, 162 Pac. 716; Lavery vs. Mid-Continent Co., 62 Okla. 206, 162 Pac. 737.

[40] Downey vs. Gooch, 240 Fed. 531; see, also, S. P. Co. vs. U. S., 249 Fed. 786; Ringle vs. Quigg, 74 Kan. 581, 87 Pac. 724; Prownant vs. Sealy, — Okla —, 187 Pac. 235; Lone Star Co. vs. McCullough, — Tex. C. A. —, 220 S. W. 1114; Masterson vs. Amarillo Oil Co., — Tex. C. A. —, 235 S. W. 908.

PART II.

OIL AND GAS LEASES.

GENERAL SUBJECTS TREATED.

§ 1. Introductory.
§ 2. Nature of Lease.
§ 3. Time as Essence.
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§ 1. Introductory.

It is immaterial whether the instrument giving rights and privileges to take oil and gas is called a lease, license, sale, contract, grant, deed or conveyance, a right to land, or other name. It is the language used aside from the terms used therein which will determine its legal effect.[1]

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[1] Gulf Co. vs. Hayne, 138 La. 555, 70 So. 509. In estimating the language which constitutes a lease, the form of words used is of no consequence. It is not necessary that the term "lease" should be used. Whatever is equivalent will be equally available. If the word assume the form of a license, covenant, or agreement, and the other requisites of a lease are present, they will be sufficient. Pelton vs. Minah, 11 Mont. 281, 28 Pac. 310; see, also, Hudepohl vs. Liberty Co., 80 Cal. 553, 22 Pac. 339; Michaelek vs. New Almaden Co., 42 Cal. A. 741, 184 Pac. 56. For a conjoint deed and lease see Wright vs. Carter Oil Co., — Okla. —, 223 Pac. 835. An oil and gas lease, whether a chattel real, an incorporeal hereditament, or whatever termed, is a right or interest relating to real estate, and while it does not rise to the dignity of an estate prior to entry by a lessee, yet it is property, and as such is subject to transfer and sale. Shaffer vs. Marks, 241 Fed. 139. A lease granted to the lessee the exclusive right to sink shafts, to drill wells, and to extract any and all kinds of minerals, especially petroleum, from the land for a term of twenty years unless sooner forfeited. The lessee agreed to incorporate a company for the operation and development of the leased property before commencement of active operations on the property and to commence active work of boring for oil not later than a specified date, and to prosecute such labors diligently. The court held that the lease was a lease of the land itself and not an ordinary oil and gas lease by which the lessor remains in possession and control of the land, giving the mere right of entry to the lessee to begin the prosecution of search for oil; and the discovery of oil was not a prerequisite to the existence of a cause of action on the part of the lessee or its assigns for the failure of the lessor to place the lessee in possession of the property. Kline vs. Guaranty Oil Co., 167 Cal. 476, 140 Pac. 1; Allan vs. Guaranty Co., 176 Cal. 421, 168 Pac. 884, A. C. 15 B. 807, note; see Cooke vs. Gulf Co., 135 La. 609, 65 So. 758. A contract or lease of land for the exploration of land for minerals, oil and gas, although designated a sale by the parties, was a grant of an exclusive right to search for, take and appropriate the minerals mentioned in the contract, and is in effect a lease of the land described for mining purposes. DeMoss vs. Sample, 143 La. 243, 78 So. 482.

The term "lease" is applied to such instruments merely through habit and for convenience. Such an instrument creates no interest in land but simply a kind of license.[2] It creates an incorporeal hereditament, a right growing out of or concerning or annexed to a corporeal thing, but not the substance of the thing itself.[3]

§ 2. Nature of Lease.

Because of the peculiar nature of petroleum oil and natural gas, leases for land of that character are governed by different principles than leases of other classes of real property.[4] The reason is the danger of loss to the landowner from draining his oil away by wells sunk on the surrounding lands; and such leases are construed most strictly against the lessee and in favor of the lessor, especially where the lessee may delay performance indefinitely,[5] and the law will imply conditions to attain the end sought by the execution of such lease.[6]

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[2] Huston vs. Cox, 103 Kan. 73, 172 Pac. 972; but see Shaffer vs. Marks, *supra* (1); McKean Oil Co. vs. Walcott, 254 Pa. St. 323, 98 Atl. 955; Ewart vs. Robinson, 289 Fed. 140; Exchange Bank vs. Head, 155 La. —, 99 So. 272. "In its inception at least, and before oil is found on the leased property, an ordinary oil lease has no effect on the title to the premises covered by the lease. It occupies a position differing no appreciable degree from any other contract, and upon its breach in a material part, may be canceled in a similar manner. The title, if any, transferred by an oil lease is inchoate in its nature. At the outset the purpose of the instrument is not to effect a conveyance of any interest in the land, but to permit only a temporary possession thereof for the purposes of exploration. If the quest be unsuccessful, no estate vests in the licensee and whatever rights may have inured to the so-called lessee end when the search is abandoned. Payne vs. Neuval, 155 Cal. 46, 99 Pac. 476; Ventura Oil Co. vs. Fretts, 152 Pa. St. 451, 25 Atl. 732; Pittsburg Vitrified, etc., Co. vs. Bailey, 76 Kan. 42, 90 Pac. 803; Kelly vs. Keys, 213 Pa. St. 295, 62 Atl. 911; Steelsmith vs. Gartlan, 45 W. Va. 27, 29 N. E. 978; notes, 26 L. R. A. (N. S.) 619; 2 Ann. Cas. 446, 448; Thornton on Oil and Gas (2d ed.), 87." Taylor vs. Hamilton, 44 Cal. A. D. 159.

[3] Gulf Co. vs. Hayne, *supra* (1). A grant by lease of oil and gas when they are in the ground is a grant, not of the oil and gas in the ground, but of such part of the oil and gas as the lessee finds and reduces to possession. Parker vs. Reilly, 243 Fed. 42. The mere fact that oil and gas leases are not a grant of the oil or gas or mineral in the ground is not a finding that they may not, by their terms, convey an interest in the land, or grant more than a mere license or incorporeal hereditament. Ewert vs. Robinson, *supra* (2); Von Baumbach vs. Sargent Co., 242 U. S. 503; Webb vs. O'Brien, 263 U. S. 313; *Ex parte* Okahara, — Cal. —, 216 Pac. 614. A lessee acquires no title to oil until it is taken from the ground. Mexican Oil Co. vs. Compania, 281 Fed. 148.

[4] Acme Co. vs. Williams, 140 Cal. 691, 74 Pac. 296; see Becker vs. Submarine Oil Co., 55 Cal. A. 703, 204 Pac. 245; Owens vs. Corsicana Co., — Tex. C. A. —, 169 S. W. 192; Leonard vs. Caruthers, — Tex. C. A. —, 236 S. W. 189.

[5] Huggins vs. Daley, 99 Fed. 606; Warner vs. Page, 59 Okla. 259, 159 Pac. 264. Where the lease requires the lessee to begin a well within a time certain or pay a stipulated rent for each year such work was delayed, the lessee can not refuse to begin the development of the property for an unreasonable time and extend the lease indefinitely by the payment of a mere nominal rent. Warren Co. vs. Gilliam, 182 Ky. 807, 207 S. W. 698; Hughes vs. Parsons, 183 Ky. 584, 209 S. W. 853; see Bristow vs. Christine Co., 139 La. 312, 71 So. 521. Where the lease does not specify the time within which the well or wells shall be completed the law will imply a reasonable time, and it is too clear to need argument that the lessee could in no event be held responsible until such reasonable time had elapsed Barquin vs. Hall Co., 28 Wyo. 168, 201 Pac. 352.

[6] Acme Co. vs. Williams, *supra* (4). Where the language in an oil and gas lease was as much that of the lessee as that of the lessor, the lease will be construed most strongly against the lessee in order to provoke development and prevent delay and unproductiveness, looking to all parts of the instrument in the light of the facts in connection with the operation. Paraffine Co. vs. Cruce, 63 Okla. 95, 162 Pac. 716; see, also, Hughes vs. Busseyville Co., 180 Ky. 545, 203 S. W. 515. Where some causes of forfeiture are expressly mentioned none others can be implied. Grubb vs. McAfee, 109 Tex. C. A. 383, 212 S. W. 464. Where the terms of an oil and gas lease are clear and explicit, and the meaning is not doubtful, and there is no latent ambiguity, the lease can not be varied by the subsequent conduct of the parties or surrounding circumstances. The parties must be deemed to be bound by the lease, regardless of the results produced. Jameson vs. Chanslor-Canfield Co., 176 Cal. 1, 167 Pac. 372; compare Kelley vs. Harris, 62 Okla. 236, 162 Pac. 221.

§ 3. Time as Essence.

In an oil and gas lease time, ordinarily, is of the essence of the contract. A proper construction of the language used will not limit the lessee to the particular term mentioned in the lease where he has demonstrated that the leased land is underlaid with oil or gas and that he is proceeding with all diligence in an efficient manner to produce the oil or gas therefrom in paying quantities.[7]

§ 4. Mutuality.

An oil or gas lease for a stated term of years or as long as oil or gas is produced and providing that operations should be commenced within a stated period, or, if not, for the payment of a certain stated annual rental, and giving the lessor a certain royalty on the oil and gas produced, is not void for want of mutuality. It is not a unilateral contract.[8]

§ 5. Surrender Clause.

The presence of the surrender clause in the lease does not render the

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[7] Ohio Oil Co. vs. Greenleaf, 84 W. Va. 67, 199 S. E. 274. The parties expressly stipulated in the lease that it was "the essence of the contract" that drilling should be commenced "within a reasonable time" and prosecuted with diligence. They thus emphasized a condition which is inherent in all oil and gas leases. So much is time considered to be an "essence" of such leases that a court is without power or right to grant an extension for performance. Murray vs. Barnhart, 117 La. 1023, 42 So. 489; Woodley vs. Hollingsworth, 154 La. —, 98 So. 87. The term "reasonable time" is a relative one, and the meaning is dependent upon the circumstances of the particular case in which the court is called upon to define it. Woodley vs. Hollingsworth, *supra.* Where the lease did not provide that time was of essence, a slight delay in monthly payments due under the lease, did not operate to forfeit the lease. Jackson vs. Twin States Co., — Okla. —, 218 Pac. 325. The right to insist upon time as the essence of a contract may be waived expressly or by necessary implication. Craig vs. Thompson, — Pa. St. —, 121 Atl. 408; Garfield Co. vs. Champlin, 78 Okla. 91, 189 Pac. 214; Petitt vs. Double-O Co., — Okla. —, 198 Pac. 616; see also, Virginia Co. vs. Haeder, 32 Ida. 240, 181 Pac 141. Even though the contract contain no express provision making time the essence thereof, where it appears that such was within the contemplation of the parties, the courts will so construe the contract. Taylor vs. Hamilton, *supra* (2); see Whitman vs. Hall, 41 Cal. A. D. 472.

[8] Hughes vs Parsons, *supra* (5); Ohio Oil Co. vs. Irvin Co., 184 Ky. 517, 212 S. E. 130. A unilateral contract is one in which there is a promise on one side only, the consideration on the other side being executed. Rich vs. Doneghey, 72 Okla. —, 177 Pac. 86. Such contracts are construed strictly. Bearman vs. Dux Co., 64 Okla. 147, 166 Pac. 199; see Northwestern Co. vs. Branine, 71 Okla —, 175 Pac. 533. A land owner executed an oil and gas lease for certain lands for a term of five years for a cash consideration of two hundred and forty dollars. The lessee agreed to pay to the lessor one-eighth of the oil produced and to pay a stipulated sum per annum for each gas well. The lessee was to complete a well on the premises within twelve months from the date of the lease or pay two hundred and forty dollars quarterly in advance for each year such completion was delayed. The lease contained a provision that upon the payment of one dollar at any time to the lessor, the lessee should have the right to surrender the lease for cancellation. Such a lease is not unilateral and is not void for want of mutuality. The cash bonus supports each and all the covenants of the lease, and although no well has been commenced on the premises, the lessor had not the option to refuse the timely tender of payments and terminate the lease. Magnolia Co. vs. Saylor, 72 Okla. —, 180 Pac. 861; see Northwestern Co. vs. Branine, *supra;* Rich vs. Doneghey, *supra;* see, also, Shaffer vs. Marks, *supra* (1). For instances of want of mutuality see Davis vs. Riddle, 25 Colo. A. 162, 136 Pac. 551; Caddo Co. vs. Producers' Co., 134 La. 701, 64 So. 684.

lease void for want of mutuality nor does it confer on the lessor the right to terminate the lease at will.[9]

§ 6. Construction of Surrender Clause.

The surrender clause in oil and gas leases will be construed strictly in favor of the landowner, the party who is bound, and against the lessee, the party who is not bound.[10]

§ 7. "Unless Lease."

Most of the oil and gas leases fall into two classes, commonly designated as the "unless lease" and the "or lease." The leases belonging to these respective classes possess such marked distinctions in the rights and liabilities that these distinctions should not be lost sight of in the construction of such a lease. Under an "unless lease," the lessee, so long as he pays the rentals in the manner provided, has an option to

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[9] Carter Oil Co. vs. Tiffin, 74 Okla. —, 176 Pac. 912; Gypsy Oil Co. vs. Van Slyke, — Okla. —, 178 Pac. 683; Northwestern Oil Co vs. Branine, *supra* (5); see Ewart vs. Robinson, *supra* (3). The option to surrender an oil and gas lease can not be declared inequitable. In case it was not exercised the lessee would be bound by his covenants. If exercised the lessor would be free to deal with the premises as he chose. Rechard vs. Cowley, 202 Ala. 337, 80 So. 419; see, generally, Eastern Oil Co. vs. Beatty, — Okla. —, 177 Pac. 104; Rich vs. Doneghey, *supra* (8); Riddle vs. Keechi, — Okla. —, 176 Pac. 737, 177 Pac. 104; but see Advance Oil Co. vs. Hunt, 66 Ind. A. 228, 116 N. E. 340, in which case it is said: That an oil and gas lease provided that the lessee was to complete a well within three months from its date or pay a stipulated rental until a well should be completed. The lease gave the lessee the right at any time on the payment of one dollar to surrender the lease for cancellation and thereafter all payments and liabilities should cease and terminate. Such a lease or contract is wanting in mutuality because, for a nominal sum, the lessee is given the right to annul it at any time and end all liability thereafter accruing under the lease. The lessee of such a lease can not enforce its terms by injunction as courts refuse to grant equitable relief where, if granted, one of them may nullify so taken by the exercise of a discretionary right which either the law or his contract has conferred upon him. An oil and gas lease contained the usual surrender clause and contained this further provision: "This surrender clause and the option herein reserved to the lessee shall cease and become absolutely inoperative immediately and concurrently with the institution of any suit in any of its terms." Such a provision is valid and binding, and when the lessee filed a suit to enjoin the lessor from re-leasing the premises and further interfering with his rights under the lease the surrender clause became inoperative and the lessee thereby became bound to perform the covenants of the lease and is entitled to be protected in his rights under the lease. Pucini vs. Baumgarner, — Okla. —, 175 Pac. 537. Cited in Brunson vs. Carter Oil Co., 259 Fed. 665; see, also, Rich vs. Doneghey, *supra* (8); and see Eastern Oil Co. vs. Beatty, *supra* (9). A lessor may refuse to accept a surrender of an oil and gas lease though the lease contains a clause giving the lessee the right to surrender, when the lessee denies liability on an unperformed covenant of the lease to be performed by him in lieu of development, but in postponement of operations. The lessor's refusal is justified when the lessee denies liability on the covenant broken, and where the surrender expressly states that the acceptance thereof will operate as a waiver of performance of the covenants and conditions broken. Hefner vs. Light Co., 77 W. Va., 217, 87 S. E. 206.

[10] Shaffer vs. Marks, *supra* (1); see, also, Ewart vs. Robinson, *supra* (3). For reciprocal rights see Melton vs. Cherokee Co., 67 Okla. 247, 170 Pac. 691. An oil and gas lease contained a clause giving the lessee the right to surrender the lease at any time, but provided that the right to surrender should cease and become inoperative upon the institution of any suit by the lessee to enforce any rights under the lease. Such a clause does not prevent a court from enforcing specific performance of the lease at a suit by the lessee, for the reason that the institution of the suit renders the surrender clause ineffective, and the lease is no longer an unilateral contract. Downey vs. Gooch, 240 Fed. 520; but see Hill Oil Co. vs. White, 53 Okla. 748, 157 Pac. 710, in which it is said: that a surrender clause in an oil and gas lease which gives to the lessee the right at any time to surrender and terminate the lease, after which all payments or liabilities should cease and terminate, deprives the lessee of the right of specific performance, directly or indirectly, until he has performed the contract or placed himself in such a position that he might be compelled to perform it on his part. The owner of land under an existing oil and gas lease exeuted a second lease that contained a clause by the terms of which the lessee could at any time upon the payment of one dollar surrender the premises and relieve himself from any obligation under the lease. This provision makes such a lease unilateral, and is such a one as a court of equity will refuse to enforce, and it will furnish the basis for an action in ejectment or other real action. The lessee in such a lease has no standing to question the validity of the first lease nor to maintain ejectment against the original lessee. Brennan vs. Hunter, 68 Okla. 112, 172 Pac. 49.

continue the lease in force. Such a lease is subject to termination at the will of the lessee, and the privilege may be exercised by a mere failure to pay the stipulated rental at the time due and upon which the lease automatically terminates, and the lessor can not sue under the lease for the rentals; but under such a lease the lessor has not the right to terminate the lease so long as the lessee complies with its terms.[11]

§ 8. "Or Lease."

Under an "or lease," even when containing a surrender clause, the payment of rentals by the lessee as required is not necessary to keep it alive from time to time, nor does the failure to pay automatically terminate the contract, as under an "unless lease." Where the lessee makes default in the payment of rentals the lessor may waive the forfeiture clause and sue and recover rentals due according to the lease. The lessee may terminate the lease at any time by availing himself of the right to do so contained in the surrender clause, and by paying all the accrued rentals, due at the time of surrender.[12]

§ 9. Implied Covenants.

Implied covenants are those only which, on grounds of legal necessity, the courts may read into the contract for the proper effectuating the manifest intention of the parties.[13]

§ 10. Joint and Several Covenants.

A covenant in an oil and gas lease may be construed to be joint or several according to the interest of the parties appearing upon the face of the lease, if the words are capable of such construction. But the

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[11] Northwestern Oil Co. vs. Branine, *supra* [(8)]; Ireland vs. Chapman, 87 Okla. 223, 208 Pac. 408. An oil and gas lease containing the "unless" clause confers an optional right upon the lessee, and should be strictly construed in favor of the lessor and against the lessee, and time is of the essence of the contract. McKinley vs. Feagins, 82 Okla. 193, 198 Pac. 997; see, generally, Guffey vs. Smith, 237 U. S. 101; Hopkins vs. Zeigler, 259 Fed. 46; Leeper vs. Lemon G. Neely Co., 293 Fed. 971; Garfield Oil Co. vs. Champlin, — Okla. —, 189 Pac. 514; 3 A. L. R. 344, 352; Thornton's Oil and Gas (3d Ed.), Secs. 192, 193. An "unless" lease does, by its terms, become null and void when the lessee intentionally fails to make the payment at the time and in the manner stipulated. Shaffer vs. Marks, *supra* [(1)]; see, also, Brunson vs. Carter Oil Co., *supra* [(9)]. For a lease which was neither an "unless" nor an "or" lease see Brennan vs. Hunter, *supra* [(10)].

[12] Northwestern Oil Co. vs. Branine, *supra* [(8)]. In the case of an "or" surrender clause lease, the lessor can elect as to whether he will cancel and terminate the lease for nonpayment or treat it as continuing in force and collect the stipulated rental. An intentional failure to pay as stipulated, in every case, may be treated as an abandonment of the lease. Shaffer vs. Marks, *supra* [(1)]; see Healdton Co. vs. Smith, 80 Okla. 242, 195 Pac. 756; see note 11, *supra*. An "or" lease is one in which the lessee agrees to drill, or in lieu of drilling to pay a rental. McMillan vs. Philadelphia Co., 159 Pa. St. 142, 28 Atl. 220.

[13] Allen vs. Colonial Co., 92 W. Va. 689, 115 S. E. 842. Leases for oil and gas are subject to the implied covenants that the lessee will do all that is necessary to carry into effect the purposes and objects of the lease. There is an implied covenant, in the absence of an express agreement to begin work within a certain time, to begin the operations within a reasonable time. This implied covenant is, after oil or gas has been discovered, as effectual and forceful as if it were expressed in direct terms. Implication is but another term for intention. And the practically universal interpretation of oil and gas leases is that in the absence of an express covenant there arises a legal implication that the lessee will drill as many wells as will afford sufficient protection against drainage and otherwise so develop the leased premises as to serve the mutual benefit of both lessor and lessee. Jennings vs. South Carbon Co., 73 W. Va. 215, 80 S. E. 368; Chandler vs. French, 73 W. Va. 658, 81 S. E. 825; see, also, Daughetee vs. Ohio Oil Co., 263 Ill. 518, 105 N. E. 308. The doctrine of implied covenants in mineral leases has been limited generally to cases in which it has been invoked to supply a consideration when none has been expressed and to make effective a principle of surrender by operation of law when the premises have been abandoned after discovery of mineral and delay rentals have ceased, and to prevent loss of the subject matter of the lease through wells on adjacent lands. Carper vs. United Co., 78 W. Va., 433, 89 S. E. 14.

covenant will be construed to be several by reason of several interests if it be expressly joint. This rule was applied to an oil and gas lease executed by a husband and wife as "parties of the first part" where the rentals were to be paid to the "party of the first part." Under this ruling a payment of rentals to the wife was a discharge of the obligation, although the title to the land was in the husband.[14]

§ 11. No Covenant Implied.

No covenant to develop the land can be implied under an oil and gas lease in the face of an expressed stipulation for periodical payments for delay thereof not extending beyond a definite term. Development on other lands in the vicinity may show the premises to be situated in an oil and gas territory and prove the adaptability of the land for profitable mining operations, but the lessor has no legal cause for complaining so long as he receives compensation for the delay for which he contracted and the operations on neighboring lands do not drain the leased premises. Under such circumstances a court will not imply a covenant for diligent operation or operation at all. The lessor is deemed to have assented to the postponement through the several periods and bound to accept the periodical payments therefor.[15]

§ 12. Breach of Implied Covenant.

Equity rarely will arbitrarily declare the forfeiture for the breach of an implied covenant. It never will do so where less drastic redress will satisfy the demands of justice.[16] Where the lessee fails to begin operations within a reasonable time he will be presumed to have aband-

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[14] Jens Marie Oil Co. vs. Rixse, 72 Okla. —, 178 Pac. 658; see, also, Jenkins vs. Williams, 191 Ky. 165, 229 S. W. 98.

[15] Eastern Oil Co. vs. Beatty, *supra* (9). An implied covenant may exist to reasonably operate the premises, but there is no implied or express covenant on the part of the lessee to leave the premises and forfeit his lease for a breach of such implied covenant. A lease provided for a forfeiture for the failure to comply with its conditions or to pay the cash consideration according to the agreement, but a breach of the implied covenant to reasonably operate the premises was not included in the causes of forfeiture. Where some causes of forfeiture are expressly mentioned none others can be implied. The remedy for a breach of the implied covenant to reasonably operate the premises is, therefore, not by way of forfeiture of the lease, but must be brought in a proper action for a breach of covenant. Grubb vs. McAfee, *supra* (6), see Harris vs. Ohio Oil Co., 57 Ohio St. 131, 48 N. E. 502; Poe vs. Ulrey, 233 Ill. 56, 84 N. E. 46.

[16] Alford vs. Dennis, 102 Kan. 403, 170 Pac. 1005; see Rembarger vs. Losch, 70 Ind. 98, 118 S. W. 831; Hughes vs. Busseyville Co., *supra* (6). It is error for a court to instruct a jury in an action to cancel or forfeit an oil and gas lease to the effect that the law looks with disfavor upon and discourages the forfeiture of rights of parties and declares that before a forfeiture will be decreed the evidence on which the forfeiture is predicated must preponderate in favor of the forfeiture. The general rule of law does not apply where the grant is in the hope and expectation of pecuniary profit from mineral development. In such cases the rule that equity abhors forfeitures does not apply for the reason that forfeitures when the lessee is guilty of laches is in that respect but equity. Munsey vs. Marnet Co., — Tex. C. A. —, 199 S. W. 686.

oned his rights, and a court of equity will, at the suit of the lessor, cancel the lease as constituting a cloud upon the title.[17]

§ 13. Diligence.

The question of reasonable diligence is one of fact.[18] Whether or not due diligence has been exercised depends on the facts and circum-

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[17] Horse Creek Co. vs. Trees, 75 W. Va. 401, 84 S. E. 376; see United Co. vs. Smith, — W. Va. —, 117 S. E. 902. The lessor in an oil and gas lease for a stated term and conditions and requiring the lessee to drill a well within a specified time and to pay certain stipulated roya ties, may sue the lessee for a breach of any express or implied covenant of the lease resulting in damages to him. A cause of action immediately arises in his favor. He is not required to wait until the abandonment of the premises or expiration of the lease to bring his action. The remedy in such case is not the forfeiture but a right to sue for a breach of the contract. In an action against the lessee of an oil and gas lease for damages for breach of a covenant, in that the lessee failed to diligently develop the premises after the discovery of oil in paying quantities, the lessor is not prevented from recovery because the damages are speculative or conjectural. The rule is that while the law will not permit witnesses to speculate or conjecture as to the possible or probable damages, still the best evidence of which the subject will permit is receivable. This is often nothing better than the opinion of well-informed persons on the subject matter under investigation. The lessee in such an action is not liable for damages though he has committed no fraud and has acted in good faith and has not drained oil from the lessor's premises by means of wells on other adjacent lands. Nor, is he permitted to escape for a failure to drill and operate additional wells if, acting on his own judgment, he believes that it will not be profitable for him to do so, as his determination in such case is not final. Such a lease can not be construed to save the lessee harmless on his arbitrary refusal to further explore and develop the leased premises. In such case the lessor is not required to prove that oil and gas have actually been lost to him by being drawn from the leased premises through wells on adjacent premises or by some wrongful or fraudulent act of the lessee. Under such a lease it clearly is the contemplation of the parties and the primary object in making the lease that the lessee shall go on and drill additional wells, market the product, and pay the lessor his royalties thereon. The lessee, in effect, agrees to do this in order that the lessor can realize on the value of the product. Daughetee vs. Ohio Co., *supra* (13); Indiana Co. vs. McCrory, 42 Okla. 136, 140 Pac. 610; Hammett vs. Gypsy Oil Co., — Okla. —, 218 Pac. 501.

[18] Buffalo Valley Co. vs. Jones, 75 Kan. 18, 88 Pac. 537; Chapman vs. Sunshine Oil Co., — Tex. C. A. —, 256 S. W. 327. As a net result of consideration of the cases which hold that, in the absence of express and definite stipulation as to the measure of diligence, an implied covenant exists demanding reasonable diligence in the development of the premises leased, it may be fairly said, in determining whether or not other wells should have been drilled, consideration must be given to a number of facts regarded collectively. Some of these are: the result of oil operations on adjacent premises; the extent of the subterranean oil reservoir; also its character and contour as affecting the question of drainage to and from the property in question; market conditions; the quantity and quality of oil thus far produced; the prospects for further production as indicated and the knowledge possessed by those expert in locating oil bodies; the demands made upon the lessee in the maintenance of the wells already drilled and his diligence in operating them to secure the greatest possible production. Leases are intended for the benefit of both parties. The lessee has a right to regard his own interest as well as that of the lessor. In short, the diligence required of the lessee involves such a course of conduct upon his part as operators of ordinary diligence would pursue, having in mind the securing of the financial benefits sought by both lessor and lessee. Becker vs. Submarine Oil Co., *supra* (4). A lease of certain lands granted "all the oil and gas" under the lands described together with the right to enter at all times for the purpose of drilling and operating, together with the right to erect and maintain structures, pipe lines, and machinery necessary for the production and transportation of oil and gas and gave the right to use sufficient water, oil, and gas to run the necessary engines in the prosecution of the business. The lease reserved to the lessor substantial royalties in kind and in money on the oil produced and saved and on the gas used off the premises. The lease indicating that the promise of such royalties was the controlling inducement to the grant. While expressly requiring that such drilling commence within a stated time from the date of the lease, but not expressly defining the measure of diligence to be exercised by the lessee in the work of development and production after the expiration of the stated period, the lease was held to contain a covenant on the part of the lessee arising by necessary implication from the nature of the lease and the stipulations therein contained to the effect that if during the term of the lease whether oil or gas is found in paying quantities then the work of development and production shall be continued with reasonable diligence and along lines as will reasonably be calculated to make the extraction of oil and gas from the leased land of mutual advantage and profit to the lessor and lessee. Indiana Co. vs. McCrory, *supra* (17). Though a lessee not guilty of fraud or bad faith may be liable for failure to exercise reasonable diligence in drilling protection wells, and where the lease has no express requirements, no breach of an implied covenant can occur, except when the absence of such diligence is both certain and substantial in view of the actual circumstances as distinguished from mere expectancy on the part of the lessor and conjectures on the part of mining enthusiasts. The expense of exploration and development, and the fact that the lessee must bear the loss of unsuccessful operations, entitles him to proceed with due regard for his own interests as well as those of the lessor. Goodwin vs. Standard Oil Co., 290 Fed. 92.

stances of the case. If an oil and gas lease is not operated with due diligence under the facts and circumstances of the case, then a court upon proper showing may declare the lease forfeited.[19] Where the only consideration the lessor receives for the exclusive right to explore, develop and remove the minerals is a royalty, whether it be oil or gas or other minerals, the courts have read into the lease the implied covenant to develop and operate with reasonable diligence.[20] It is an implied covenant in an oil and gas lease providing for the payment of royalties that the lessee will use reasonable diligence and good faith in exploring and developing the property.[21] The question of due diligence may be affected by the fact that the lessee worked in a "wild cat" field.[22] In Wapa Co. vs. McBride,[23] the court, in stating his reason for cancelling the lease, stated it was for failure to comply with the implied covenant which was to protect the premises from drainage of off-set wells. A court of equity will declare a forfeiture of an oil and gas lease because of the breach of an implied covenant to diligently operate and develop the property when such forfeiture will effectuate justice, but the granting of such relief depends upon the facts and circumstances surrounding the particular case; and if the evidence shows that a part of the leased premises under an oil and gas lease has been properly developed with reasonable diligence by the lessee, and other parts have not, the court may cancel the lease as to the undeveloped portion and permit the lessee to continue the developed part.[24] Where a mining lease provided for an annual payment as an advance payment, to continue "until mining is commenced or during the continuance of this agreement," the court said: "That the exploration for minerals should be made within a reasonable time is of the very essence of the agreement; and a condition precedent to the accruing of the right to take the minerals discovered upon the terms of payment indicated. The failure to make such exploration within a reasonable time, and to make it with such thoroughness and certainty as to determine the existence of mineral or oil, would be fatal to the agreement. Upon this, we think, this lease depended as a condition precedent."[25] Where an oil and gas lease covering lands located in a field which is being actively developed is given for a term of two years and contains a provision that, in case oil or gas is found on the premises, the lease may be continued in force by lessee so long as he diligently develops the land and markets the product, the failure of the lessee to use reasonable diligence in the respects named will cause said lease to lapse.[26] Where the lessee undertakes to pay the lessor until, in the judgment of the lessee, "oil or gas can not be found on the premises, or, having been found, has ceased to exist," clearly implies an engagement to explore and develop the premises.[27] The extent of the development and number of wells to be drilled, and as to the protection of the lines is often, if not usually, expressed in the lease; and that is certainly the better practice. When the extent of

[19] Strange vs. Hicks, 78 Okla. 1, 188 Pac. 350.
[20] Cotner vs. Munday, — Okla. —, 219 Pac. 321.
[21] Peoples Gas Co. vs. Dean, 193 Fed. 938.
[22] Keechi Co. vs. Smith, 81 Okla. 266, 198 Pac. 588.
[23] 84 Okla. 184, 201 Pac. 984.
[24] Papoose Oil Co. vs. Rainey, 89 Okla. 110, 213 Pac. 882.
[25] Tenn. Oil Co. vs. Brown, 131 Fed. 700.
[26] Buffalo Valley vs. Jones, *supra.*[18]
[27] Consumers Co. vs. Littler, 162 Ind. 320, 70 N. E. 363.

the development and protection of the lines is provided for in the lease, there can be no implied covenant for further development and protection of the lines. The implied covenant arises only when the lease is silent on the subject.[28] The smaller the tract of land demised, the more important is the need of prompt exploration and development, because the lessor is entitled to his royalty as promptly as it can be had, and delay endangers the drainage of oil and gas from the demised premises through wells in its immediate vicinity.[29]

§ 14. Surface Rights.

Ordinarily, by implication, the lease carries with it the right to use so much of the surface as is necessary for extracting and removing the minerals thereunder.[30]

§ 15. Location of Wells.

An oil and gas lease provided that no wells be drilled within two hundred feet of the buildings on the leased premises without the consent of the lessor. During the development of the land by the lessee and over the objections of the lessor the lessee located and drilled a well within the prohibited distance with full knowledge that the well was so located. The lessor was entitled to an injunction perpetually restraining the lessee from operating the well so drilled and from entering upon or in any manner using any ground within two hundred feet of the buildings upon the demised premises.[31]

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[28] Harris vs. Ohio Oil Co., *supra.*[(15)]; see Brewster vs. Lanyon Zinc Co., 140 Fed. 801.

[29] Federal Oil Co. vs. Western Oil Co., 112 Fed. 375.

[30] The lessor and the lessee under an oil and gas lease are both in possession of the surface. Each, in the exercise of his right therein and thereon is in duty bound to have due regard for the rights of the other. The lessee in exercising his rights under such a lease owes the duty to the lessor to not unnecessarily, carelessly, or wantonly injure him in the proper use of the surface. In choosing between two locations for drilling a well equally available to him, the lessee is bound to choose the one to do least injury to the lessor. He is not at liberty to choose locations for the drilling of wells in utter disregard of the rights of the lessor. Likewise the lessor in the use of the surface for any available purposes is in duty bound to exercise reasonable care not to interfere with, injure, or annoy the lessee in drilling and operating his oil wells. Under such circumstances each is bound to use his own so as not to injure the rights of the other. Gillespie vs. American Zinc Co., 247 Pa. St. 222, 93 Atl. 272; see Moore vs. Decker, — Tex. C. A. —, 220 S. W. 773. Injunction lies to prevent the surface owner of land from obstructing the mineral owner in the right to use surface. Squires vs. Lafferty, — W. Va. —, 121 S. E. 90. In the absence of a specific covenant in an oil and gas lease making the lessee liable for damages to growing crops and their surface rights, the lessee is not liable for such damages as are necessarily incident to the operations authorized by the lease. Such a lease carries within its implications, if not within its expression, such rights to the surface as may be necessarily incident to the performance of the objects of the contract. Yet these implications go no further. The lessee must protect the surface of the ground in so far as such incident necessity does not exist and is liable to the lessor for any damages to the surface resulting from acts not within the implications of the lease. Pulaski Oil Co. vs. Connor, 62 Okla. 211, 162 Pac. 466. A lessee having the right under his lease to go upon certain described land of the lessor and bore and develop said land for oil and gas, with the necessary usual and convenient rights therefor, has a right to build a road over the land where the building of such road is necessary to enable him to haul material for his rig and tools and machinery for drilling. If, after building such road in good faith, he abandons the contemplated exploration for oil and gas before drilling a well, he is liable to the lessor for damages to the land caused by the building of said road. Coffindaffer vs. Hope Co., 74 W. Va. 107, 81 S. E. 966. The right of the owner of surface of land to subjacent support includes the right to use the soil for the agricultural pursuits to which it may be adapted. Cole vs. Signal Knob Co., — W. Va. —, 122 S. E. 268; see Walsh vs. Kansas Fuel Co., 91 Kan. 310, 137 Pac. 941.

[31] Kelly vs. Phillips Co., 262 Pa. St. 412, 105 Atl. 631. A stipulation in an oil and gas lease to the effect that no wells should be drilled within three hundred feet of a dwelling house unless with the consent of both parties, indicates that the parties in making the lease did not intend to burden the property. This intention will prevail as against an effort to make the provision a covenant running with the land. McFarland vs. Gulf Co., — Tex. C. A. —, 204 S. W. 460.

§ 16. Additional Wells.

The number and location of oil wells requisite to the performance of the covenant to develop on the part of the lessee depends upon the character of the leased lands. The area of the lands does not determine the number and their relation to one another and is not governed by any fixed rule. Whether, after discovery of oil or gas by means of the initial or experimental well, there is a duty to sink additional wells depends upon the probability arising from the circumstances surrounding the property, that an additional well be profitable to the lessee. The lessee in an oil lease is under no duty to operate at a loss to himself in order to make the premises profitable to the lessor. It is only under circumstances indicative of mutual profit to the lessee as well as to the lessor that the duty to develop devolves.[32]

§ 17. Drainage of Adjoining Lands.

While oil wells drilled and operated may, by reason of their proximity to a division line, in fact drain oil from adjoining lands, yet such operations, in the absence of special circumstances or relations between the parties, offer no basis for a claim to a share in or accounting for the oil so produced, or for a receivership for the operation of the wells.[33]

§ 18. Off-set Wells.

The courts are not harmonious as to whether or not in an ordinary lease of oil and gas lands there is no implied covenant by the lessee to

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[32] Steele vs. American Co., 80 W. Va. 206, 92 S. E. 410; and see Burt vs. Deorsam, — Tex. Co. C. A. —, 227 S. W. 354; Humble Oil Co. vs. Strauss, — Tex. C. A. —, 243 S. W. 536; Clark vs. Cooper, — Tex. C. A. —, 247 S. W. 929. For a clear and full discussion of the principle of law, see Brewster vs. Lanyon Zinc Co., *supra* (28). The number and location of wells requisite to the performance of a covenant to drill under an oil and gas lease depend upon the character of the leased territory and whether after the discovery of oil or gas there is a duty to sink an additional well or wells depends upon the probabilities arising from the circumstances surrounding the property and whether they will be profitable to the lessee. The lessee is under no duty to operate a lease at a loss to himself to make the premises profitable to the lessor. The lessee must bear all the burdens incident to development and if a well is dry he loses its cost; but if it proves rich in either mineral the lessor receives his share but loses nothing in any event. For such reasons the lessee, except where he fraudulently fails or refuses to act when affirmative action is required, must control the prosecution of the necessary operations, but he can not unduly delay operations where clearly the conditions surrounding the property are such as require speedy progress to effect development and to afford protection against drainage. Jennings vs. South Carbon Co., *supra* (15).

[33] Gain vs. South Penn. Co., 76 W. Va. 769, 86 S. E. 883; see Fairbanks vs. Warrum, 56 Ind. A. 337, 104 N. E. 1114. The courts of Texas recognize that a cause of action may be alleged and proved against a lessee for failure to act so as to save from waste the leased premises caused by outside wells under express, as well as by implied agreement. Burt vs. Deorsam, *supra* (32); Humble Oil Co. vs. Strauss, *supra* (32); Texas Co. vs. Barker, — Tex. C. A. —, 252 S. W. 809. As to measure of damages see Texas Co. vs. Barker, *supra*. A lessee who obtained an oil and gas lease from the owner of land and who was unable to obtain a lease from the adjoining landowner, is not to be charged with fraud by the latter and is not liable to such adjoining landowner for any part of the oil produced by him from wells on the leased land, though located so near the line as to drain the oil from the adjoining premises. The mere execution of such a lease causes no inference of a fraudulent intent and justifies no implication on the part of the lessee to wrong the adjoining landowner. Gain vs. South Penn. Co., *supra*. Drainage can be prevented only by drilling off-set wells. Eastern Oil Co. vs. Beatty, *supra* (9). The authorities are generally agreed upon the rule that because of the peculiar nature of the subject matter of the contract and the probability of great loss likely to result to the lessor from the failure by the lessee to prosecute drilling operations promptly, by reason of drainage from the leased property into surrounding wells already in operation, such leases are most strictly construed against the lessee and in favor of the lessor. Taylor vs. Hamilton, *supra* (2).

protect the leased premises against drainage through flowing wells on adjacent land by drilling off-set wells. There is an implied condition that he will do so upon the demand of the lessor.[34]

§ 19. Failure to Drill Off-set Wells.

In order that a lessor may recover damages from a lessee in an oil and gas lease because of the failure to drill off-set wells to prevent the drainage of the oil in the leased lands by wells drilled on adjacent lands, it must appear from the evidence that it is reasonably certain that the oil from the lessor's land has been or is being drained by the wells drilled on adjacent land. It is not possible to prove this with absolute certainty. It is not impossible, nor is it difficult, to prove such circumstances as would reasonably lead to the conclusion that such was the fact. Thus, it would be easy to show the character of the sand in which the oil was found on the adjoining land. That wells had been drilled on such lands; their distance from the land, and the oil produced therefrom. It could also be shown what area would probably be drained of oil by the wells drilled in the particular sand in which the wells were drilled on the adjoining land. If such area, so probably drained, included a part of the leased lands, it could then be reasonably assumed that the wells on the adjoining lands were draining oil from the leased lands.[35]

§ 20. Rentals.

The development of the leased premises is a controlling consideration with oil and gas leases and lessees may be held liable in damages, or the lease forfeited and cancelled according to its provisions for failure to develop in accordance with the fair and reasonable interpretation of the lease. But this does not prevent the contracting parties from stipu-

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[34] Stanley vs. United Co., 78 W. Va. 793, 90 S. E. 344. But see United Co. vs. Meredith, — Tex. C. A. —, 258 S. W. 550; Chambers vs. Perrine, 81 W. Va. 321, 94 S. E. 381; compare Jennings vs. Southern Carbon Co., *supra* (13); Chandler vs. French, *supra* (13). The rule that should govern in determining whether off-set wells should be drilled, and the intent, etc., is that which in the circumstances would be reasonably expected of operators of ordinary prudence and it is not necessary to prove that the lessee acted fraudulently. Burt vs. Deorsam, *supra* (32); Texas Co. vs. Ramsower, — Tex. C. A. —, 255 S. W. 466. In a lease of land for the production of oil and gas in which the lessee obligated himself to begin the drilling of a well within a specified time or forfeit the lease, there is no implied covenant on his part to drill as many wells as may reasonably be necessary to secure the oil or gas for the common advantage of the lessor and the lessee within such time, where oil or gas has not been found in paying quantities. Nabors vs. Producers Co., 140 La. 985, 74 S. E. 527; but see Carper vs. United Co., *supra* (15). The practically universal interpretation of oil and gas leases is, that where the contract does not expressly state what shall be done by the lessee, there lies the legal implication that if he finds oil and gas, or if they are found on adjoining lands, he will drill as many wells as will offer sufficient protection against drainage, and so otherwise develop the leased lands as to serve the mutual benefit of lessor and lessee. The necessity for such interpretation is based on the illusive and migratory nature of oil and gas, their disposition to travel and to find vent through the most readily accessible opening. The lessee though experienced, as against the lessor, who is without experience, can not fraudulently exercise his judgment solely to promote his individual interest, ignoring the interest of the lessor, but to serve him, his judgment must conform to that generally exercised by other operators in similar circumstances and conditions and in view of the intention of the parties entering into the lease. Steele vs. American Oil Co., *supra* (32); see, also, Doddridge Co. vs. Smith, 154 Fed. 970; Harris vs. Ohio Oil Co., *supra* (15); Highfield Co. vs. Kirk, *supra* (8); Guffey Co. vs. Jeff Chaison Co., 48 Tex. C. A. 555, 107 S. W. 609; Texas Co vs. Ramsower, *supra*.

[35] Steele vs. American Oil Co., *supra* (32).

lating for the payment of a fixed sum as a minimum rental in lieu of development.[36]

§ 21. By-products.

The fact that the lessee of an oil and gas lease, who had drilled and was operating oil wells, installed and connected vacuum pumps in connection with such wells for the purpose of increasing the production thereof, and the further fact that the lessee successfully utilized what was called "vapor," which was emitted from the wells at the casing head, and by process of distillation and compression converted the escaping substance into gasoline for the mutual advantage and benefit of the lessor and lessee, did not thereby render the lessee liable for the annual rental of gas wells, under the terms of the lease. The mere collecting of the vapor or volatile substance and the manufacture of gasoline therefrom was no indication of proof of gas in the wells, and did not bring them within the terms of the lease as producing gas wells.[37]

§ 22. Delay Rentals.

A covenant in an oil and gas lease for quarterly delay rentals, performed in part only, is separate, distinct, and disassociated from a covenant to drill or pay rentals. Performance or part performance of the former covenant does not excuse the nonperformance of the latter.[38] A covenant in an oil and gas lease requiring the lessee to complete a well within a specified time from the date of the lease or pay the lessor a stated sum each month for each additional month such completion was delayed until a well was completed, is for the benefit of the lessor only. In case of violation of the covenant on the part of the lessee the lessor may either cancel or terminate the lease, or he may, at his option, col-

[36] Gilbert vs. Bolds, 62 Ind. A. 595, 113 N. E. 379; see Carper vs. United Co., *supra* (13). A provision in an oil and gas lease rendering it null and void for failure to pay the rent as stipulated is for the protection of the lessor. In order to terminate the lease by reason thereof it requires affirmative action on his part. Notwithstanding the failure to pay the rent the tenancy continues until the lessor declares a forfeiture. If before the lessor takes action the rent due is paid or tendered it heals the breach and saves the tenancy. McKean Co. vs. Walcott, *supra* (2). In an oil and gas lease where development is contemplated and an annual rent is provided for, if in case wells are not drilled within a stated time the payment of rent is not of the essence of the contract. Payment at any reasonable time or upon reasonable demand would be sufficient to avoid forfeiture. Bloom vs. Rugh, 98 Kan. 589; 160 Pac. 1135. A clause in an oil and gas lease to the effect that the failure of the lessee to complete a well upon the premises described within the time specified or to pay the rentals at the time and manner as therein provided shall *ipso facto* work a forfeiture of the lease without notices applies only to rentals provided to be paid for delay in drilling and not to rentals or royalties to be paid for gas from a producing well. Castlebrook Co. vs. Ferrell, 76 W. Va. 300, 85 S. E. 544. A lessee of an oil and gas lease may be required to pay rent as long as he holds possession, although the lease by its terms may be at an end; but the execution of an oil and gas lease creates no presumption of subsequent possession by the lessee. Ash Grove Co. vs. Chanute Co., 100 Kan. 547, 164 Pac. 1087. Where the lands of which the husband died seized were subject to a valid oil and gas lease at the time of his death, yielding a rental, the widow is dowable of the reversion and the rent or royalty as an incident of the reversion. Campbell vs. Lynch, 81 W. Va. 374, 106 S. E. 869.

[37] Locke vs. Russell, 75 W. Va. 602, 84 S. E. 948; see Wemple vs. Producers Oil Co., 145 La. 1031, 83 So. 232.

[38] Hefner vs. Light Co., *supra* (9).

lect the rents stipulated in the lease until the premises are reconveyed or until the term of the lease expires.[39]

§ 23. Forfeiture Avoided.

An oil and gas lease provided that if the lessee did not drill a well within one year a stipulated rental was to be paid for each additional year the beginning of operations was delayed. Where no operations were commenced during the second year the stipulated rental was not due until the end of that year. The tender of the rental for the second year before the end of that year was sufficient to avoid forfeiture.[40]

§ 24. When Development Not Compulsory.

Where an oil and gas lease is for a definite term and provides for the payment of a stipulated sum for delay during that time and that provision still is effective, the lessor can not refuse the stipulated payments for delay and recover damages, or invoke a forfeiture for a failure to develop on demand. This, in fact, would permit one party to the contract to demand and enforce immediate performance of that which he had agreed might be deferred. A lessor suffers no injury in consequence of his inability to compel development under such circumstances except delay in realizing royalties upon oil and gas that might be produced. The oil and gas still are available for later operation and to the delay in producing that he has solemnly consented for the compensation payable as stipulated.[41]

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[39] McKee vs. Grimm, 57 Okla. 680, 157 Pac. 308; Brunson vs. Carter Oil Co., *supra* (11). Where an oil and gas lease was executed before any discoveries of oil or gas had been made on the leased premises and before there had been any discoveries or developments on adjacent lands, and the lease provided for payment of rentals as to certain stated periods in lieu of development, and where after execution of the lease wells are drilled on adjacent lands that make the drainage of oil and gas under the leased premises probable and the consequent loss to the lessor imminent, the law will then imply a condition for the development of the leased premises by the lessee, on demand and notice from the lessor that he will refuse to receive further rentals. This on the theory that where an implied condition will adequately protect from the results of a contingency which it is evident the parties did not intend to disregard but for which they made no express provision, and will be less onerous to one of them than a covenant for such purpose would be. The principle of equity covering any construction and the limitation of necessity upon addition by implication, make it the duty of a court to adopt the condition, not the covenant, as an unexpressed provision of the contract. Carper vs. United Co., *supra* (34). An oil and gas lease provided that on certain conditions it should become null and void unless the payee paid quarterly in advance a specified sum as compensation in lieu of drilling within the succeeding quarter. Such a lease or agreement does not create a mere tendency at will, terminable at the option of the lessor or void as a perpetuity. But the lessor may require development after the end of any quarter for which the lessee has paid the agreed compensation for delay upon reasonable notice to the lessee. In the event of the lessee's failure to drill within reasonable time after such notice, equity will cancel the lease upon application by the lessor. Johnson vs. Armstrong, 81 W. Va. 399, 94 S. E. 753; see Todd vs. Manufacturers Co., 90 W. Va. 40, 110 S. E. 446; see, also, Smith vs. McCullough, 285 Fed. 698.

[40] Hughes vs. Parsons, *supra* (5); see Dix River Co. vs. Pence — Ky. —, 123 S. W. 263; Warren Co. vs. Gilliam, *supra* (5); McNutt vs. Whitney, 192 Ky. 132, 232 S. W. 386; Union Co. vs. Indiana Tex. Co., — Ky. —, 251 S. W. 1008. Where an oil and gas lease provides for a forfeiture unless a well is drilled through a certain sand within a specified time, the lessee is not required to drill below such sand in search of a new sand, but his contract has been complied with when he has drilled through the specified sand. Papoose Co. vs. Swindler, — Okla. —, 220 Pac. 506.

[41] Eastern Oil Co. vs. Beatty, *supra* (9).

§ 25. Lessor's Option.

An oil and gas lease required the lessee to begin drilling within a stated time or pay a certain stated sum per month for failure to commence drilling. The lease also provided that a failure upon the part of the lessee to comply with the conditions thereof would render it void. These provisions give the lessor the option as to his remedy. He may elect to put an end of the lease, or he may elect to have the lease continued in force to the end of the term and enforce the payment of the amount due each month.[42]

§ 26. Consideration.

Oil and gas leases are not dependent for their validity on an agreement to pay royalties and a consequent expressed or implied covenant to develop. There may be any other consideration agreeable to the parties and valuable in law, or the consideration may be wholly executory. It may be in money only, paid at the time of the execution and delivery of the instrument. The amount recited may be small, only one dollar, but a dollar is a unit of value and is a thing of value. In fact and in the eyes of the law one dollar is a sufficient consideration to support a conveyance of land. If sufficient to support the conveyance of the whole estate in land it is sufficient to support a grant of a less interest. Where one dollar was the sole consideration paid for an oil and gas lease and the payment was recited in the instrument, the instrument would not be void. But, aside from this, it may be that development and prospective royalties are the real and moving consideration for such a lease. But this can not be where the parties expressly agree that development may be deferred for a stated time. One of the considerations, and, perhaps, the principal one for such a

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[42] Allen vs. Narver, 178 Cal. 102, 172 Pac. 980. An option supported by a consideration, furnishes an illustration of a contract which is valid notwithstanding the lack of mutuality. It is no objection to the validity of a contract that the holder of the option is under no obligation to exercise it. Pierce Ass'n vs. Woodrum, — Tex. C. A. —, 188 S. W. 245. Unless based upon a sufficient consideration, an option merely is a continuous offer of sale which may be withdrawn at any time before acceptance. Worlds Fair vs. Powers, 224 U. S. 173; Milwaukee Co. vs. Shea, 123 Fed. 9; Brown vs. Savings Union, 134 Cal. 448, 55 Pac. 598; Hobbs vs. Davis, 168 Cal. 556, 143 Pac. 733; see Baker vs. Mulrooney, 265 Fed. 529. A consideration of one dollar, in the absence of fraud or bad faith, is sufficient. Pittsburg Co. vs. Bailey, 76 Kan. 42, 90 Pac. 803. An agreement to drill a well on the property covered by the option is sufficient. Starr vs. Crenshaw, 279 Mo. 344, 213 S. W. 811. After acceptance of the terms by the holder of the option, the parties are mutually bound and either one may compel specific performance by the other. Hoogendorn vs. Daniel, 178 Fed. 765; Heyward vs. Bradley, 179 Fed. 325. That an accounting may be had, see S. P. Mines vs. Court, 33 Nev. 97, 110 Pac. 503. Time is of the essence of the option whether so expressly stated therein or not. Waterman vs. Banks, 144 U. S. 394; Mackey vs. U. S., 144 U. S. 394; Mackey vs. U. S., 244 Fed. 275; Champion Co. vs. Champion Mines, 164 Cal. 205, 128 Pac. 315; Merk vs. Bowery, 31 Mont. 298, 78 Pac. 519. The condition as to time may be waived or relieved against in equity. Wheeling Co. vs. Elder, 54 W. Va. 255, 46 S. W. 357. A further consideration is not necessarily incidental to the mere extension of time for performance of the conditions of the option. See L. R. A. 1915B. That a verbal promise to extend the time is sufficient, see Stamey vs. Hemple, 173 Fed. 61; Downey vs. Gooch, *supra* (c). One who is in possession under an agreement to convey giving him the right of possession, may maintain an action against a stranger to the title for a trespass which consists of the removal and conversion of the substance of the estate. He may even recover from his vendor for injuries amounting to waste, committed upon the premises after delivery of possession. Lightner vs. Lane, 161 Cal. 689, 120 Pac. 771. If it is provided in the option agreement that in case of default in making any of the payments the property shall revert back to the grantor of the option, it is not necessary to return the payments made nor wait until final payment was due and in default before bringing suit in ejectment. Williams vs. Long, 139 Cal. 186, 62 Pac. 264; see, also, Hazzard vs. Johnson, 45 Cal. A 191, 187 Pac. 121. For repossession of property and fixtures, see Smith vs. Beebe, 31 Ida. 496, 174 Pac. 608; see, generally, Worlds Fair vs. Powers, *supra*; Skookum Co. vs. Thomas, 162 Cal. 539, 123 Pac. 363; Champion Co. vs. Champion Mines, *supra*.

grant, is the covenant to develop and yield prospective royalties, or pay the stipulated price in lieu thereof.[43]

§ 27. Insufficient Consideration.

The rule that contracts performed without sufficient consideration which are optional as to one of the parties are optional as to both, applies to contracts or oil and gas leases consisting of mutual promises wholly executory and unperformed. The promises on one side being the sole consideration for the promise on the other and in which it is optional with one of the parties whether he will perform his promise, then prior to performance by him, it is optional with the other whether he will perform his promise. The correct statement of the rule is that contracts unperformed, without sufficient consideration, which are optional as to one are optional as to both.[44]

§ 28. Ambiguous Lease.

The object of the interpretation and construction of an oil and gas lease is to arrive at and give effect to the mutual intent of the parties as expressed in the lease. Where a lease is ambiguous, the true intention, if it can be ascertained from the contract, must prevail over verbal inaccuracies, inapt expressions, and dry words of the stipulations. It is the duty of a court to place itself as far as possible in the position of the parties at the time the lease was executed and to consider the instrument itself as drawn, its purpose and the circumstances surrounding the transaction; and, from a consideration of all these elements, to determine upon what sense and meaning of the terms used their minds actually met.[45]

§ 29. Joint Lease.

A joint lease, by which separate owners lease their lands described as a single tract, gives the lessee the right to explore for oil upon any or all of such tracts of land. By the production of oil upon any one of such tracts there is vested in the lessee the right to extract and remove the oil from all the tracts whether by means of a well, or wells, drilled upon one of them, or more than one of them. After the oil is produced the royalties, or the royalty oil, should be delivered to the lessors and divided among them in the proportion that the parcel of land held by each of them bears to the total area of the land.[46]

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[43] Rich vs. Doneghey, *supra* (8); McKay vs. Lucas, — Tex. C. A. —, 220 S. W. 172; McKay vs. Kilcrease, — Tex. C. A. —, 220 S. W. 177; Davis vs. Texas Co., — Tex. C. A. —, 232 S. W. 556; but see Nolan vs. Young, — Tex. C. A. —, 220 S. W. 154; see Guffey vs Smith, *supra* (11); Eastern Oil Co. vs. Beatty, *supra* (9); Norton vs. Young, — Tex. C. A. —, 220 S. W. 158; see Hunter vs. O'Rear, — Ky —. 259 S, W. 41.

[44] Rich vs. Doneghey, *supra* (8); see Hill Oil Co. vs. White, *supra* (10).

[45] Witherington vs. Gypsy Oil Co., 68 Okla. 138, 172 Pac. 634; Prowant vs. Sealy, 77 Okla. 244, 187 Pac. 229. In the construction of an ambiguous oil and gas lease a court, in order to ascertain the intention of the parties will consider the interpretation placed upon the lease by the parties themselves and will also look to their actions thereunder before any controversy arose between them as to its meaning. And such construction, when reasonable, will be adopted and enforced by a court and the construction placed thereon by the parties will prevail if the language will reasonably allow of such construction, although the court would probably adopt a different one but for the particular construction already placed by the parties on their agreement. Bearman vs. Dux Co., *supra* (8).

[46] Lynch vs. Davis, 79 W. Va. 437, 92 S. E. 427; see Higgins vs. California Co., 109 Cal. 304, 41 Pac. 1087; Wettengel vs. Gormley, 160 Pa. 559, 28 Atl. 934; Gillette vs. Mitchell, — Tex. C. A. —, 214 S. W. 619; but see Northwestern Co. vs. Ullery, 68 Ohio St. 259, 67 N. W. 494; compare Pittsburgh Co. vs. Ankrom, 83 W. Va. 81, 97 S. E. 593; see, generally, Fairbanks vs. Warrum, *supra* (33); Pierce Corp. vs. Schacht, 75 Okla. 101, 181 Pac. 731.

§ 30. Sublease.

A lessee of certain oil and gas lands sublet a portion of the leased premises to a third person. The original lease contained a covenant against incumbrances. The lessor brought suit to recover the rents collected from a subtenant and to forfeit the original lease on the ground that the subletting was for a purpose not contemplated by the provisions of the lease and was an incumbrance in violation of the covenants of the lease. The lessor made no claim for damages nor was any proof offered of any damages by reason of the subletting and of the alleged improper use of the premises by the sublessee. The Civil Code of California (§ 1930) provides that when a thing is let for a particular purpose the hirer must not use it for any other purpose. If he does so he is liable for all damages and the lessor may treat the contract as rescinded. Under this section of the Code the lessor could only maintain an action for damages. He could not sue to recover rents received from the sublessee and have the original rescinded; nor could he on appeal change the theory of his action and insist that it was an action for damages.[47]

§ 31. Second Lease.

A lessor can not lawfully execute a second lease to a stranger covering property held under a valid subsisting lease unless subject to the rights of the prior lessee.[48]

§ 32. Lease of Homestead.

An oil and gas lease occupied as a homestead which granted the right to enter upon and operate the same for oil and gas, together with the right to lay pipes, erect power houses, stations, and fixtures necessary for the production of oil and gas, is such a grant of the use and occupancy of the homestead as requires the joint consent of the husband

[47] Smith vs. United Crude Oil Co., 179 Cal. 570, 178 Pac. 141, and see 50 Cal. A. 466, 195 Pac. 434. In the lease under discussion in this case it was provided that all expenditures in connection with the boring of wells, erecting derricks, pumps, tanks, pipes and material, should be provided by the lessee at his own expense. The lessee expressly agreed that he would keep the premises clear and free of incumbrances and liens, particularly mechanics', material men's, and laborers' liens. There was no agreement in the lease against subletting and the lessee had a right to sublease portions of the land for the development of oil and a sublease could not be considered an incumbrance within the meaning of the lease.

[48] Equity has jurisdiction at the suit of the holder of a valid oil and gas lease, whose rights have become vested by the discovery of oil or gas, to remove as a cloud upon his rights a subsequent lease executed to a stranger covering the same tract of land. Ohio Oil Co. vs. Greenleaf, *supra* (7). See Carbon Black Co. vs. Ferrell, 76 W. Va. 300, 95 S. E. 544. Where the holder of a valid oil and gas lease has obtained vested rights by drilling wells and by the production of oil and gas, equity will enjoin the lessor from creating a cloud on his title by executing to a stranger another lease on the same property where it appears to be reasonably certain that such cloud will be created unless enjoined. Castlebrook Co. vs. Ferrell, *supra* (36). A second lessee in an oil and gas lease of certain described lands had actual and constructive notice of a prior existing lease of the same lands. Such a second lessee acquired no rights under his lease as against the prior lease. Under these circumstances the original lessee had the right to have his title to the oil and gas under the leased lands quieted as against the second lessee and to have such second lessee enjoined from interfering with his right to enter upon the land and remove the oil. Warren Oil Co. vs. Gilliam, *supra* (5); see, also, Castlebrook Co. vs. Ferrell, *supra* (36). As to second lease by heirs see Powell vs. Schoenfield, 262 Pa. St. 588, 106 Atl. 110; see Bessho vs. General Pet. Corp., 186 Cal. 133, 199 Pac. 22; Follette vs. Pacific Corp., 189 Cal. 205, 208 Pac. 295.

and wife. An oil and gas lease executed by one of the spouses alone is invalid.[49]

§ 33. Interest and Rights of Lessee.

Oil and gas while in the earth, unlike solid minerals, are not the subject of ownership distinct from the soil, and a grant of the oil and gas is a grant not of the oil that is in the ground, but of such a part as the grantee may find and reduce to possession. It passes nothing except the right to explore for the same under the terms of the agreement or lease.[50] But the lessee is entitled to protection in his right to explore the premises for oil or gas; and he is entitled to an injunction restraining subsequent lessees of the same premises from destroying this right.[51] Where it is stipulated that the lease is to continue during the time that oil or gas is found in paying quantities, and no oil or gas has been found during the term that the lessee has the right to exploit the land, the lease expires and may be annulled.[52]

§ 34. Lessee's Right of Determination.

Where the lease does not fix the number of wells to be drilled for the development of the premises as contemplated, the lessee then has the right to determine the number of wells or the extent of the development, and his decision is conclusive on the subject so long as he acts honestly and in good faith upon sound business principles.[53] When oil is found the right to produce it becomes a vested right and the lessee will be protected in extracting it agreeably to the terms of the lease.[54]

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[49] Gillespie vs. Fulton Co., 140 Ill. A. 147; Ray vs. Brush, 112 Kan. 110, 210 Pac. 662; Carter Co. vs. Popp, — Okla. —, 174 Pac. 747, 210 S. W. 563; see Gary vs. McKinney, — Tex. C. A. —, 239 S. W. 283, 202 S. W. 103; McEntire vs. Thomason, — Tex. C. A. —, 210 S. W. 563; Haynie vs. Stovall, — Tex. C. A.—, 212 S. W. 792; but see Rumsey vs. Sullivan, 150 N. Y. S. 287, 212 S. W. 422.; Griffin vs. Bell, — Tex. C. A. —, 202 S. W. 173; see, generally, Caudi vs. Wagoner, 184 Ky. 381, 212 S. W. 422; Robinson vs. Smalley, 102 Kan. 842, 171 Pac. 1155; see, also, Chisholm vs. Creek Co., 273 Fed. 589. The claimant of an unperfected unrestricted homestead right can not make a valid lease of the minerals therein. Bower vs. Higbee, 9 Mo. 239; Milliken vs. Carmichael, 134 Ala. 623, 33 So. 9; see Wadkins vs. Producers Oil Co., 227 U. S. 368; Parish vs. U. S., 184 Fed. 590; Chanslor-Canfield Co. vs. U. S., 266 Fed. 145; compare Tiernan vs. Miller, 69 Neb. 764, 96 N. W. 661; Anderson vs. Wilder, 83 Miss. 606, 35 So. 875.

[50] Warner vs. Page, *supra* (5); Kelley vs. Harris, *supra* (6); Lima Oil Co. vs. Pritchard, — Okla. —, 218 Pac. 866; but see Terry vs. Humphreys, — Okla. —, 203 Pac. 539, in which case it was held that an oil well and gas lease for a stated period or as long thereafter as oil or gas, or either of them, is produced from the demised premises, by the lessee, conveys "real property." In Daughetee vs. Ohio Oil Co., *supra* (13) it was held that where it was provided the lessee should hold the premises for a stated period and as much longer as gas and oil are found in paying quantities on the premises, the lease conveyed a freehold estate, for the reason that it may continue indefinitely. "An oil lease to have and to hold the same unto the party of the second part, his heirs and assigns, for the period of ten years from date hereof, with the right of renewal for a further term of ten years at the end of such term, or at the end of any subsequent term for which it may be renewed, gives the lessee the right of renewal in perpetuity." Becker vs. Submarine Oil Co., *supra* (4).

[51] Downey vs. Gooch, *supra* (10).

[52] Union Co. vs. Adkins, 278 Fed. 856; Chaney vs. Ohio Co., 32 Ind. A. 193, 69 N. E. 477; Cassell vs. Crothers, 193 Pa. St. 359, 44 Atl. 446.

[53] Gilbert vs. Bolds, *supra* (36); but see Kirlicks vs. Texas Co., — Tex. C. A. —, 201 S. W. 687; see, also, Brewster vs. Lanyon Zinc Co., *supra* (28); Alford vs. Dennis, *supra* (16); Grubb vs. McAfee, *supra* (6).

[54] Brookshire Co. vs. Casmalia Co., 156 Cal. 211, 103 Pac. 927; Dickey vs. Coffeyville Co., 69 Kan. 106, 76 Pac. 398.

§ 35. Lessee Can Not Set Up His Own Default.

A lessee in an oil and gas lease can not set up his own default in order to terminate the lease or escape liability under its provisions. If he fails to perform the covenants of the lease it lies with the lessor to declare a forfeiture.[55]

§ 36. Covenants Construed in Favor of the Lessee.

In oil and gas leases the compensation of the lessor generally is a royalty. The covenants to be performed by the lessee which relate to the right to drill or explore for oil or gas generally are construed most strongly in favor of the lessor. But this rule has its limitations. When a lessee has faithfully performed all his covenants and has discovered oil in paying quantities and the lessor is receiving the royalties as the lease contemplates, the lessor can not then invoke this rule to aid him in dispossessing the lessee. The lessee having performed his covenants he thereby obtained a vested interest in the oil and gas in the leased premises because of his exclusive right to drill, and the lessee holds such interest as security against the lessor.[56]

§ 37. Forfeitures.

Forfeitures are not generally favored by the law; but forfeitures which arise in oil and gas leases by reason of the neglect of a lessee to develop or operate the leased premises are favored because of the peculiar character of the minerals sought to be produced. Perhaps in no other class of leases is prompt performance of contract so essential to the rights of the parties, or delay by one party likely to prove so

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[55] Ohio Valley Co. vs. Irvin Co., *supra* (8); see Warren Co. vs. Gilliam, *supra* (5); Monarch Co. vs. Richardson, 124 Ky. 602, 99 S. W. 668; Maud Co. vs. Bodkin, 75 Okla. 6, 180 Pac. 959; see, also, Becker vs. Submarine Oil Co., *supra* (9). Where the lease provides that if the premises should not be operated the lease should be void the word "void" means "voidable" at the election of the lessor and he must do some act evincing an intention to avoid the lease before it can be considered void or terminated. Such provisions are for the benefit of the lessor and he has an option to discontinue the lease on default of the lessee, or affirm the continuance of the contract. If the lease provides that the lessee's failure to complete a well within a stated period or any default in the covenant thereof to pay a certain yearly rental should render the lease null and void and all rights and claims should therefrom cease, still the lessee by his own default can not relieve himself from the liability already incurred. Lavery vs. Mid-Continent Co., 62 Okla. 206, 112 Pac. 737; see, also, McKean Co. vs. Walcott, *supra* (2). By the terms of an oil and gas lease the lessee, an oil company for a valuable consideration, specifically undertook to commence and with diligence drill a well on the premises into a designated sand. The lease contained a clause providing that a failure to commence and complete said well should work a forfeiture and render the lease null and void. The forfeiture provision was for the benefit of the owner of the leasehold interest and gave him the option to declare a forfeiture upon the failure of the oil company to discharge its obligation to drill. The oil company could not, by virtue of the forfeiture clause and without the consent of the owner, terminate the contract by its own default and thereby escape liability for resultant damages. Lavery vs. Mid-Continent Co., *supra*.

[56] Burgan vs. South Penn Co., 243 Pa. St. 128, 89 Atl. 823. A covenant relating to the drilling of new wells, the erection of new derricks and buildings is a covenant running with the land. Bradford Oil Co. vs. Blake, 113 Pa. St. 83, 4 Atl. 218; Pierce Ass'n. vs. Woodrum, *supra* (42).

injurious to the other.[57] The lessee has a right to regard his own interest as well as that of the lessor. In short the diligence required of the lessee involves such a course of conduct upon his part as operators of ordinary diligence would pursue, having in mind the securing of the financial benefits sought by both lessor and lessee.[58]

§ 38. What Warrants Forfeiture.

To warrant a forfeiture it must affirmatively appear from all the circumstances that the lack of diligence "is both certain and substantial."[59]

§ 39. Forfeiture Can Not Be Arbitrarily Exercised.

The right of a lessor to forfeit the lease for nondevelopment can not be arbitrarily exercised. The lessor first must demand of the lessee that he develop in good faith the leased lands. If, after notice and demand, the lessee fails to begin the development within a reasonable time the lessor may then have the lease forfeited.[60] A mere discovery of a "dry hole" does not end the lease under a forfeiture clause for failure to drill a well within a stipulated time.[61] The driving of a stake to indicate the location of a well and the driving of another stake locating a place to set a boiler to drive a drilling machine on the part of the lessee, do not constitute a commencement of operations to drill within the provision of the lease.[62]

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[57] Hughes vs. Busseyville, *supra* (6); Soaper vs. King, 167 Ky. 121, 180 S. W. 46; see, also, Alford vs. Dennis, *supra* (16); Rembarger vs. Losch, *supra* (10). An oil and gas lease will be strictly construed against the lessee and although under the general rule forfeitures are not favored, they are in fact favored in contracts of this character. Stephenson vs. Slitz, — Tex. C. A. —, 255 S. W. 812. A forfeiture clause, for the nonpayment of rent or for failure to fulfill a covenant, is for the benefit of the lessor, and is enforceable only at his option. Such a covenant is not self enforcing. Craig vs. Thompson, *supra* (8). The right of a lessor to forfeit the lease must be promptly asserted or it will be treated as a waiver. The tendency of the later judicial decisions is to frown on forfeiture where the rights of the parties insisting thereon can otherwise be adequately protected. Bloom vs. Rugh, *supra* (26); Wellsville Co. vs. Miller, 44 Okla. 493, 145 Pac. 344; Pierce Corp. vs. Schacht, *supra* (46); see, also, Indiana Co. vs. McCrory, *supra* (17). A person entitled to the forfeiture and the consequent right of re-entry may waive such right or he is estopped by his own conduct from asserting the right. And any fact properly evidencing the intention of a lessor to waive any right of forfeiture is admissible in an action by an assignee of the lessor to forfeit the lease. Munsey vs. Marnet Co., *supra* (16). The true rule undoubtedly is that the right to declare a forfeiture must be distinctly reserved; that the proof of the happening of the event on which the right is to be exercised must be clear; that the party entitled to do so must exercise his right promptly; and that the result of enforcing the forfeit must not be unconsciable. Craig vs. Cosgrove, — Pa. St. —, 121 Atl. 408. In Taylor vs. Hamilton, *supra* (2), the court says: "It is a general rule that *forfeitures* are discountenanced in the law; but where, as in the case of the exploration and development of oil territory, the profits to be derived frequently depend upon the exercise of diligent prosecution of the work and continuous operation of the completed plant, the only protection afforded the owner of such property is the cancellation of the permit where its possessor has been grossly neglectful of mutual interests as between him and such owner, or wilfully has been guilty of dilatory practices because of speculative or selfish interests, or otherwise, which amounts to an abandonment. (Acme Oil & Min. Co. vs. Williams, 140 Cal. 681, 74 Pac. 296.) Having to do with the subject of forfeiture of oil leases, it is said in Risch vs. Burch, 175 Ind. 621, 95 N. E. 123, that, "oil and gas leases or contracts are in a class by themselves, and the ordinary rule that forfeitures are not favored does not apply with full force to them if at all. The provisions for a forfeiture usually found in them are generally held to be for the benefit of the landowner and clearly enforceable by him where the lessee has done nothing to carry out the purpose of exploration, and has failed to make payments for the right to do so.' And in this connection see, also: Gillespie vs. Bobo, 271 Fed. 641; Dill vs. Fraze, 169 Ind. 53, 79 N. E. 971; Bell vs. Kilburn (Ky.), 234 S. W. 730; Clutter vs. Wisconsin, etc., Oil Co., — Tex. C. A., —, 233 S. W. 322; Gasaway vs. Teichgraeber, 107 Kan. 340, 191 Pac. 282; Jenkins vs. Williams (Ky.), 229 S. W. 94."

[58] Young vs. Forest Co., *supra* (29); Priddy vs. Thompson, 204 Fed. 955; Lindlay vs. Raydure, 239 Fed. 928; see Huggins vs. Daley, *supra* (5); Backer vs. Penn. Co., 162 Fed. 627; Florence vs. Orman, 19 Colo. A. 79, 73 Pac. 628; Rawlings vs. Armel, 70 Kan. 778, 79 Pac. 683; Wagner vs. Mallory, 169 N. Y. 501; Frank Co. vs. Belleview Co., 29 Okla. 719, 119 Pac. 260.

[59] Becker vs. Submarine Oil Co., *supra* (4).

[60] Brewster vs. Lanyon Zinc Co., *supra* (28); Becker vs. Submarine Oil Co., *supra* (4).

[61] Ohio Oil Co. vs. Irvin Co., *supra* (8).

[62] Henning vs. Wichita Co., 100 Kan. 255, 164 Pac. 298.

§ 40. Immediate Development Presumed.

From the fact that lessors in oil and gas leases usually receive no consideration except in royalties from oil and gas after their discovery, the presumption always is that such leases are made for the purpose of immediate development, unless the contrary appears from the terms of the lease itself.[63]

§ 41. Abandonment.

When it is claimed that a right under an oil and gas lease has been lost by abandonment and upon which forfeiture of the lease is sought the issue of intention rarely is, if ever, absent. An intention to abandon is to be found by a jury from a consideration of the nature and extent of the undertaking, the conduct of the parties, and what they did do or failed to do in that respect. The rule does not mean that the jury shall find that a specific mental reservation was reached by the person so charged to so abandon the right, as such a finding never could have a basis in the testimony except by admission or confession.[64]

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[63] Where a lease of oil and gas lands, with royalty to the lessor on the product is the sole and only consideration therefor it necessarily is implied, as of the essence of the contract, that the lessee shall work the wells with reasonable dispatch, for their mutual advantage. Acme Co. vs. Williams, *supra* (4); Daughetee vs. Ohio Oil Co., *supra* (13); Burgan vs. South Penn Co., *supra* (36); Parish Fork Co. vs. Bridgewater Co., 51 W. Va. 583, 42 S. E. 655. There is an implied condition or covenant of every lease of land for the production of oil therefrom that when the existence of oil in paying quantities is made apparent, the lessee shall put down as many wells as may reasonably be necessary to secure the oil for the common advantage of both the lessor and the lessee. Highfield Co. vs. Kirk, *supra* (8). The fluctuating and uncertain character and value of oil and gas lands render it necessary for the protection of the landowners that the properties should be developed as speedily as possible. The lessee for such purpose will not be permitted to hold the land for speculative or other purposes an unreasonable length of time for a mere nominal rent when a royalty on the product is the chief object for the execution of the lease. Hughes vs. Busseyville Co., *supra* (9). See cited case as to the application of the rule to the effect that an oil lease contains an implied covenant on the part of the lessee to develop the leased premises, depends on circumstances and on the intention of the parties. An implied covenant to develop can not be read into a lease of land for oil and gas where the territory had not before been developed and its productive value was not known. Where the object of the operations contemplated by the lease is to obtain a benefit or profit for both lessor and lessee, neither is in the absence of a stipulation to that effect, the arbiter of the extent to which, or the diligence with which, the operation shall proceed, but both are bound by the standard of what in the circumstances, would reasonably be expected of an operator of ordinary prudence, having regard to the interest of both. Indiana Co. vs. McCrory, *supra* (17); Wapa Co. vs. McBride, 84 Okla. 184, 201 Pac. 984; Cotner vs. Munday, *supra* (20).

[64] Munsey vs. Marnet Co., *supra* (10). The distinction between "forfeiture" and "abandonment" as applied to oil and gas conveyances and leases is so shadowy that in discussing the one necessarily the conditions of the other are involved. But one distinction is that "abandonment" rests on the intention of the parties, while "forfeiture" does not rest upon the intent to release the premises, but is an enforced release. A vested title can not ordinarily be lost by abandonment unless there is satisfactory proof of an intention to abandon. The existence of an intent to waive or abandon the right to drill for oil and gas under the lease is a question of fact, and the lessor must show an intention on the part of the lessee to abandon the lease. If the proof would authorize the conclusion that there was no such intention, then a court would not be justified in decreeing a forfeiture of the lease. Fisher vs. Crescent Co., — Tex. C. A. —, 178 S. W. 905; Hall vs. McClesky, — Tex. C. A. —, 228 S. W. 1094; Garrett vs. South Penn. Co., 66 W. Va. 587, 66 S. E. 541; Wisconsin Texas Co. vs. Clutter, — Tex. C. A. —, 258 S. W. 265. Abandonment may be more readily found in cases of oil and gas leases than in most other instances. The rights granted under such leases are for exploration and development. The title and interest are inchoate until oil or gas is found in quantities warranting operation, and accordingly a lessee will not be permitted to fail in development and hold the lease for speculative or other purposes except in strict compliance with his contract, and for a valuable and sufficient consideration other than the development. Harris vs. Riggs, 63 Ind. 208, 112 N. E. 36. When the lease has been abandoned by the lessee, the lessor has three remedies, any one of which he may pursue. The lessor may go into a court of equity to cancel the lease and recover incidental damages; he may in a separate action at law sue for damages for breach of the contract, or he may treat the lease as rescinded and sue to recover possession of the property. Millar vs. Mauney, — Ark. —, 234 S. W. 498. It may be accepted as a principle of law that even in the case of a lease creating a vested interest in the lessee, the doctrine of abandonment may be legally asserted and proved in the ordinary manner as a defense to the claim of prior lessee. Much stronger would be the ground for recognizing it as a defense if the instrument in a controversy in equity may not have created a vested interest. Burke vs. North, 296 Fed. 259.

§ 42. Intention.

Whether an oil and gas lease had been terminated by abandonment on the part of the lessee and the acceptance of or reentry upon the premises by the lessor is a question of intention. A lease so terminated is said to have come to its end by operation of law, the legal result arising from the act of the parties. The intention on the part of the lessee to abandon and on the part of the lessor to resume possession of the premises on his own account and treat the lease as having been surrendered and as ascertained from their acts and conduct is the test.[65] Unexplained cessation of work after sinking a dry well would be sufficient proof of abandonment.[66]

§ 43. Cotenants.

Cotenants are owners of the whole of part and of the whole.[67] None of the cotenants has the exclusive right to any determinate part of the property. The owner of an undivided interest in a tract of land, nor a majority of such owners, has not the right to exploit such land for oil and gas by making a lease therefor without the consent of all the cotenants. Such right can not be conferred upon such a lessee. Such a lease may be valid as to the lessor but it is voidable as against the other cotenants.[68]

§ 44. Rights of Cotenant.

Each cotenant may enter upon the premises and operate the same for oil and gas.[69] If his efforts result in a "dry hole" he must sustain the entire loss; but, if successful, he must proportionately share the profits with the excluded cotenants.[70]

§ 45. Ratification of Voidable Lease.

The pretermitted cotenants may, if they so elect, permit the lessee to continue operations under the lease and require him to account for

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[65] Grubb vs. McAfee, *supra* [(6)]. Where an oil and gas lease is abandoned by the lessee, he can not thereafter revive the same nor claim nor enforce any rights thereon without first securing the consent of the lessor or procuring a renewal of the lease. Harris vs. Riggs, *supra* [(64)]; see, also, Ohio Oil Co. vs. Detamore, 165 Ind. 243, 73 N. E. 906.

[66] Foster vs. Elk Fork Co., 90 Fed. 178; Strange vs. Hicks, — Okla. —, 188 Pac. 347.

[67] Gulf Co. vs. Carrol, 145 La. 299, 82 So. 277; see Gulf Co. vs. Hayne, *supra* [(1)]; Paxton vs. Benedum-Trees Co., 80 W. Va. 187, 94 S. E. 472. A patent issued to two or more persons creates presumptively a tenancy in common as between them and third parties. Frisbie vs. Marques, 39 Cal. 451, affirmed in 101 U. S. 473.

[68] Id. Zeigler vs. Brenneman, 237 Ill. 15, 86 N. E. 597; see Compton vs. Peoples Co., 75 Kan. 572, 89 Pac. 1039; York vs. Warren Co., 191 Ky. 157, 229 S. W. 116. A lease of an entire tract made by one cotenant is binding on the other tenants when ratified by them. One method of ratification is acceptance of benefits under the lease by the cotenants. Bessho vs. General Petroleum Corp., *supra* [(48)].

[69] Williamson vs. Jones, 43 W. Va. 562, 27 S. E. 411; see, also, McCord vs. Oakland Co., 64 Cal. 134, 27 Pac. 863. Several cotenants of an oil and gas lease assigned the lease to an operator who was to deliver to them a part of the product. One of the joint owners did not join in the assignment, and notified the assignee not to deliver any oil to his cotenants. The court held (1) that the party not joining in the assignment was not entitled to his share of the oil without proving that his cotenants had received more than their share; (2) that if he chose to affirm it, he must take his share with the others upon a distribution of the royalty after deducting all proper charges and expenses; (3) that if he did not affirm the lease, he had no claim to any share of the royalty, and could only look to the lessee as a cotenant who has not acquired his title. Enterprise Co. vs. National Co., 172 Pa. St. 421, 33 Atl. 687; Gillette vs. Mitchell, — Tex. C. A., — *supra* [(46)].

[70] Id. See Silver King Co. vs. Conkling Co., 255 Fed. 740; Job vs. Potton, L. R. 20 Eq. 84.

such proportion of the royalties as their interest in the oil in place bears to the whole.[71]

§ 46. Mining Partnership.

There is no presumption of a partnership from cotenancy.[72] Drilling the well by their joint efforts—this fact of itself alone—whether as cotenants, or in order to become cotenants, does not make them mining partners. Such an arrangement lacks the elements of partnership.[73] Where tenants in common cooperate in developing a lease for oil and gas, each agreeing to pay his part of the expenses and to share in the profits or losses, they constitute a mining partnership.[74]

§ 47. Life Estates.

Neither a widow owning a dower interest in land nor a life tenant has the power to make a lease of land under which oil or gas or other minerals can be removed from the land as against the remainderman.[75] Oil and gas well drilling by the lessee after the death of the lessor are regarded as open mines at the time of the lessor's death and the life tenant will be entitled to the rents, issues and profits reserved to the lessor accruing from such wells during the life tenancy.[76] An ante nuptial agreement by which after marriage the wife should hold and enjoy her separate estate does not cut the surviving husband out of his curtesy or his inheritance. It does not deprive him nor his legal heirs from the right to moneys received as royalties on oil for well drilled under a contract with and in the lifetime of the wife.[77]

§ 48. Open Mines.

Mining leases do not constitute a sale of any part of the land, and the mineral derived from the usual operation of open mines constitutes the rents and profits of the land and belong to the tenant for life or years; but this rule does not apply to unopened mines in the absence of a contract for opening and leasing them.[78]

§ 49. Assignees.

A right of action for a breach of the covenant of an oil and gas lease

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[71] Paxton vs. Benedum-Trees Co., *supra* (67)

[72] Neill vs. Shamburg, 158 Pa. St. 263, 27 Atl. 992.

[73] Gillespie vs. Shufflin, — Okla. —, 216 Pac. 132.

[74] Barrett vs. Buchanan, — Okla. —, 213 Pac. 734; see, also, Madar vs. Norman, 13 Ida. 585, 92 Pac. 572.

[75] Prout vs. Hoy Oil Co., 263 Ill. 54, 105 N. E. 26; see, generally, Campbell vs. Lynch, *supra* (30).

[76] Bramer vs. Bramer, 84 W. Va. 168, 99 S. E. 329.

[77] Id. See, generally, Cochran vs. Gulf Co., 139 La. 1010, 72 So. 718.

[78] Von Baumbach vs. Sargent Co., *supra* (3). The lessee in an oil and gas lease after the death of the lessor entered upon the leased premises and drilled and produced oil and gas. Oil and gas wells so drilled are regarded as open mines at the time of the lessor's death. The life tenant will be entitled to the rents, issues and profits reserved to the lessor accruing from such wells during the life tenancy. Bramer vs. Bramer, *supra* (76). Under a will devising an interest in mineral lands under lease for mining operations, royalties under such a lease earned previous to but payable after the death of the decedent are payable to the life tenant. Poole vs. Union Trust Co., 191 Mich. 162, 167 N. W. 430; see, also, Seager vs. McCabe, 92 Mich. 186, 52 N. W. 299; and see Priddy vs. Griffith, 150 Ill. 562, 37 N. E. 999. The reason of the rule permitting dower in opened mines is that the land had been devoted to mining purposes by the owner of the fee during his life; and the mode of enjoyment and source of profit fixed and determined by him. In such case mining is a mode of enjoyment fixed by the owner and to extract and take the minerals is but to take the accruing profits from the land. Daniels vs. Charles, 172 Ky. 238, 189 S. W. 194.

is assignable. No particular form of words is essential to pass the right of action. Words manifesting a clear intention to assign are sufficient.[79]

§ 50. Rentals.

An assignee of an oil and gas lease which contains a stipulation to the effect that all covenants and conditions therein shall be binding on the assigns of both parties, is liable for the rental payment prescribed in the lease so long as he retains possession under the lease.[80]

§ 51. Liability of Assignee for Rent.

Where a lease of land for oil and gas provides that a certain sum shall be paid each year as royalty on the gas produced from each well and marketed off the premises, and the lessee operates the lease, markets the gas from wells thereon for a portion of the year, and thereafter assigns the lease, the assignee, in the absence of a special contract, is not liable for the royalties accruing on the wells, the product of which was marketed prior to the assignment of the lease, regardless of when these royalties became due and payable but the assignee of the lease is liable for the royalties accruing during the time he markets the product and enjoys the estate.[81]

§ 52. Action Against Assignee.

Where a lessor in an oil and gas lease brings an action against an assignee to recover damages for failure to drill wells upon the lease lands in order to prevent drainage of the oil in such leased lands through wells drilled upon adjacent land, it is necessary for the lessor to prove (1) the assignment and transfer of the lease to the assignee, the defendant in the suit; (2) that the assignee's operations on the lessor's land were under and by virtue of the lease. This, because the action being based upon a breach of an implied covenant to develop, it can not be maintained against any person not a party to the lease.[82]

§ 53. Damages.

It has been held that in an action for damages for a breach of the contract the measure of damages which the well driller was entitled to recover was (1) the expense necessarily incurred in hauling his drilling rig and machinery from where they were to the well that he began drilling; (2) the expense necessarily incurred in rigging up and drilling to the point where drilling was stopped; (3) reasonable compensation for services in removing the rigging and drilling machinery; (4) reasonable compensation for the enforced idleness of the rig and machinery; (5) the reasonable value of the well driller's services lost

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[79] Millan vs. Bartlett Co., 78 W. Va. 367, 89 S. E. 711.

[80] Ardizonne vs. Archer, — Okla. —, 177 Pac. 554, 178 Pac. 263; see, also, Oklahoma Co. vs. Winship, — Okla. —, 200 Pac. 849; Texas Co. vs. Bruce, — Tex. C. A. —, 233 S. W. 539; see, also, Gibson vs. Texas Co., — Tex. C. A. —, 239 S. W. 671. While an assignee of an oil and gas lease is not liable for the consequences of the failure of his assignor to drill a well on the leased premises before the assignment of the lease, yet if the assignee continues to pay the stipulated delay rental in lieu of drilling after the acceptance of the assignment after he acquires title, he is liable for the consequence of his own failure. Hefner vs. Light Co., *supra* [(9)]; see Pierce Ass'n vs. Woodrum, *supra* [(42)].

[81] Columbus Co. vs. Knox Co., 91 Ohio St. 35, 109 N. E. 529.

[82] Steele vs. American Co., *supra* [(32)].

during the time he remained on the premises at the request of the lessee of the land.[83]

§ 54. Invalid Lease.

Where a lessee, with no intention to violate any law or do any wrongful act, takes possession of land under a lease owned by him, and in good faith, believing in his title, proceeds to develop the premises for oil and gas purposes and it later develops that his lease was invalid, the measure of damages would be the price of the oil and gas at the surface or in the pipe line or tanks, less the reasonable cost of producing the same.[84]

§ 55. Adverse Interest Established.

Where a lessee in good faith takes peaceable possession of the leased premises, believing that the lessor owned the entire title in the premises, and an action is brought by another person, who establishes an interest in the land, the measure of damages arising in favor of the party establishing a partial interest in the premises is the value of his share of the oil at the surface less the reasonable cost of production.[85]

§ 56. Failure to Develop.

A lessor of lands for the production of oil and gas in an action against the lessee for failure to properly develop the leased premises, is entitled only to such damages as he sustained by any failure on the part of the lessee to exercise an honest judgment in proceeding with the necessary explorations on the leased lands and the extraction of oil therefrom, taking into consideration (1) the subject matter of the lease; (2) the character of the mineral products; (3) the nature of the oil-bearing sand, whether dense or soft and porous; (4) developments on contiguous lands, whether by the lessee or different operators; (5) the cost of drilling; (6) proximity to market; (7) facilities for marketing; (8) current prices, whether high or low; (9) location of lands; (10) and such other conditions attendant on the operations as may explain the necessity for prompt, or excuse for delayed action in prosecuting such development. In such case the lessor assumes the burden of showing, and by clear and convincing proof, must, to avail him, show by witnesses having experience, skill, and engaged in similar operations that the lessee, having due regard for the advantage and profit of him-

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[83] Letcher vs. Maloney, 70 Okla. —, 172 Pac. 972. For cases involving damage to the surface by another's oil operations or negligence, see Duvall vs. White, 46 Cal. A. 305, 189 Pac. 324; Northrup vs. Eakes, — Okla. —, 178 Pac. 266; Walters vs. Prairie Co., 85 Okla. 77, 204 Pac. 906; Kay & Kiowa Co. vs. Moore, — Okla. —, 221 Pac. 511; Avery vs. Wallace, — Okla. —, 224 Pac. 515; Indiana Co. vs. Christensen, 188 Ind. 406, 123 N. E. 789; see, generally, Brennan Co. vs. Cumberland, 29 App. D. C. 554; Kuhn vs. Jewett, 32 N. J. Eq. 647; Texas Co. vs. Bellar, 51 Tex. C. A. 154, 112 S. W. 323; Texas Co. vs. Clark, — Tex. C. A. —, 182 S. W. 351. The value of the land immediately before the overflow and its value immediately afterwards is a proper way to arrive at the amount of damage to the land. Avery vs. Wallace, *supra*. In a suit for damages for the destruction of a growing crop, such damages are to be estimated as of the time of the injury, to be applied as compensation for the value of the crops in the condition in which they were at the time of the destruction. DeArman vs. Oglesby, 49 Okla. 118, 152 Pac. 356; Producers Co. vs. Maple Leaf Co., 82 Okla. 120, 198 Pac. 577.

[84] Barnes vs. Winona Oil Co., 83 Okla. 253, 200 Pac. 985.

[85] Minshall vs. Berryhill, 83 Okla. 100, 205 Pac. 932.

self, and the lessor, has not, surrounding circumstances considered, exercised ordinary diligence in conducting such operations.[86]

§ 57. Liquidated Damages.

A covenant in a lease that the lessee should commence operations by a certain date and on failure to do so he should pay the lessor a stated sum for each and every month in which he fails to commence such operations is not a penalty but liquidated damages. In an action on such a lease to recover the amount of the monthly payments, proof of the amount of damages is unnecessary as the amount is fixed by the terms of the lease. Damages for breaches of contract touching future interests in oil wells of unknown value are of such remote and speculative value as to bring them peculiarly within the rule that the parties should have the right to fix them by mutual agreement. It would be impossible to calculate with any degree of certainty the amount of damage sustained by a lessor by reason of the breach of the covenant of such a lease by the lessee.[87]

§ 58. Partition.

A lessee in an oil and gas lease can not contest the title of his lessor as an owner in indivision with others and compel him and his co-owners to make a judicial partition in kind of the leased property.[88]

§ 59. Widow's Rights.

The owner of land leased the same for oil and gas purposes and died before any wells were drilled. Partition was had of the leased land and dower lands were assigned to the widow and to the other heirs, respectively. Subsequently drilling operations were commenced and numerous producing wells drilled. In such case the wells drilled by the lessee

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[86] Grass vs. Big Creek Co., 75 W. Va. 719, 84 S. E. 750; see Clark vs. Cooper, 197 Ky. 530, 247 S. W. 929. It was stipulated in an oil and gas lease that the lessee should develop the land by boring for oil and gas and should drill a well to a certain depth. The lessee failed to drill the well to the specified depth and abandoned the well before reaching such depth. The lessor was entitled to recover as damages for a breach of the lease the reasonable value of the lease, as this must be regarded as the actual value paid by the lessor to have the well drilled as specified. Henry Oil Co. vs. Head, — Tex. C. A. —, 163 S. W. 311. A lessor in an oil and gas lease may maintain a suit against the lessee to recover damages for injuries sustained by him because of the failure of the lessee to drill off-set wells necessary to save the oil and gas in the leased land and to prevent it from being drained by wells on adjacent lands. The damages sought in such an action is for diminution of the royalties by reason of such drainage. Steele vs. American Co., *supra* (32).

[87] Allen vs. Narver, *supra* (42). There is some conflict in the decisions of the Courts of Civil Appeal of Texas as to whether or not, under any circumstances, a contract can specifically be performed when it carries with it a clause providing for "liquidated damages." Most of these courts hold that a contract of this sort is a mere option, where it provides for "liquidated damages" under conditions showing an express or implied agreement on the part of the vendor to accept such damages in lieu of a performance of the contract. Texlouana Co. vs. Wall, — Tex. C. A. —, 257 S. W. 875.

[88] Gulf Co. vs. Hayne, *supra* (1); see Campbell vs. Lynch, *supra* (36), as to partition between copartners. Known oil lands, like mines, can not be judicially partitioned in kind at the suit of one of the coowners or by a creditor of a coowner. A suit for partition usually results in a decree for the sale of the property. Royston vs. Miller, 76 Fed. 50; Mitchell vs. Cline, 84 Cal. 409, 24 Pac. 164. This particularly as to oil and gas lands. Hall vs. Vernon, 47 W. Va. 295, 34 S. E. 764; but see Daingerfield vs. Caldwell, 151 Fed. 554. The partition may be voluntary. Dunlap vs. Jackson, — Okla. —, 219 Pac. 314; see Tonopah Co. vs. Tonopah Co., 125 Fed. 400; Empire State Co. vs. Bunker Hill Co., 131 Fed. 591; Mullins vs. Butte H. Co., 25 Mont. 525, 65 Pac. 1004.

on the portion of the land assigned to the widow as and for her dower are not mines nor wells worked by her, since the working right is held by the lessee even though they may be deemed mines opened in her husband's life. She is not entitled to the entire royalties and rents accruing from such wells nor is her dower right limited to such royalty and rents as subjects thereof. She is entitled to dower to whatever its extent may be when the royalties and rents accrue from all the wells drilled on the entire tract of land covered by the lease.[89]

§ 60. Lessee's Rights.

On the death of a lessor of an oil and gas lease the leased lands descend to the lessor's heirs burdened by the right of the lessee. The latter is the complete master of the situation *quo ad* the oil and gas, having right to drill wherever he chooses on the leased premises. A partition of the land among the heirs in no way affects the lessee's right or liberty in that respect. A lease on a single tract of land subsequently broken into several subdivisions by a partition or by conveyances is not segregated and converted into as many distinct leases as there are subdivisions. That could be done only with the consent and cooperation of the lessee. As to him the lease and its subject, the tract of land, are entireties. After, as well as before, the division, there is one lease of one tract, yielding, when productive, one royalty or rental in the aggregate. The rent or royalty is an entire thing arising out of the whole tract of land. Though the royalty oil or gas rental comes from a certain well or wells, it is not legally the rent or return of the wells or the severed tract of land on which they are located. It is rent of the whole tract covered by the lease. In legal contemplation the wells are not drilled on the several portions as under the lease on that portion, but they are drilled under the lease as made, which binds and holds all the parties after the division as it did before.[90]

§ 61. Purchaser's Rights.

A tract of land covered by an oil and gas lease was subdivided in a proceeding in bankruptcy. Each subdivision was sold separately by the trustee to different purchasers. The purchasers of these respective parcels of land from the trustee bought all of the estate therein subject only to the right of the oil and gas lessee to explore for and produce the oil and gas. This right conferred upon the lessee is the same as would have existed in the different purchasers had there been no lease. From this it follows that the purchaser of each subdivision is entitled to the royalties on all of the oil produced from wells drilled on his subdivision and royalties from the oil or gas must be paid to the owner of the subdivision upon which the wells are drilled from which the production is had.[91]

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[89] Campbell vs. Lynch, *supra* (30).

[90] Id.

[91] Pittsburgh Co. vs. Ankrom, *supra* (46); see Osborn vs. Arkansas Co., 103 Ark. 175, 146 S. W. 122; Fairbanks vs. Warrum, *supra* (33); Ohio Co. vs. Ullrey, 68 Ohio St. 259, 67 N. E. 494; Pierce Oil Co. vs. Schacht, *supra* (46); Wettengel vs. Gormley, *supra* (46); a case containing an extensive review of cases bearing upon this principle; see, also, Gillette vs. Mitchell, *supra* (46).

§ 62. Cancellation and Rescission.

A lessor of an oil and gas lease, invoking the jurisdiction of a court of equity to cancel and rescind the lease for the breach of an implied covenant, must come into court with clean hands. He must act with reasonable diligence after the discovery of his right to a forfeiture of the lease on account of its breach.[92]

§ 63. Laches.

The doctrine is well settled, both in the English courts and the courts of this country, as to the relentless enforcement of the doctrine of laches where the subject of controversy is mining and oil property purely speculative in value.[93] Inexcusable delay for a period short of the time provided by the statute of limitations may constitute laches, and is an equitable defense wholly independent and outside of such statute, whenever the relief sought is wholly equitable.[94] Delay can not be excused except by some actual hindrance or impediment caused by the fraud or concealment of the party in possession.[95] Mere lapse of time never constitutes laches, but in addition the court must find that it would be inequitable to grant the relief prayed for.[96] The mere institution of a suit does not relieve the plaintiff of the charge of laches.

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[92] Pierce Corp. vs. Schacht, *supra* (46); see Michigan Pipe Line Co., 111 Fed. 284; Washburn vs. Gillespie, 261 Fed. 41; Indiana Co. vs. McCrory, *supra* (17); Wellsville Co. vs. Miller, *supra* (57). In case of a breach of an implied covenant to properly develop an oil and gas lease the lessor must notify the lessee and demand that the lessee comply with the implied covenants before a court will grant a forfeiture. Papoose Oil Co. vs. Tainey, 89 Okla. 110, 213 Pac. 882. Mere inadequacy of consideration or other inequality in the terms of a lease does not of itself constitute a ground to avoid it in equity. See Smith vs. McCullough, 285 Fed. 699. In a suit to cancel an oil and gas lease for failure to operate an existing well and for other reasons, that lessor had received royalties from the well could not operate as an estoppel, nor affect his right to sue for cancellation for failure to comply with other obligations of the lease. Louisiana Co. vs. Kendall, 155 La. 1, 98 So. 862. In many of the cases it is pointed out that where the conditions of the instrument giving a right to explore for oil provide for the cancellation thereof at a fixed time unless a certain rent be paid for an extension of the time within which to commence operations, such extension becomes entirely optional with the licensee, and that equity will not relieve against his failure to exercise the option in strict accordance with its terms. Taylor vs. Hamilton, *supra* (2).

[93] Twin Licks Co. vs. Marbury, 91 U. S. 587; Johnson vs. Standard Co., 148 U. S. 360; Gaines vs. Chew, 167 Fed. 630; Taylor vs. Salt Creek Co., 285 Fed. 532; Hodson vs. Federal Oil Co., 285 Fed. 552; Beck vs. Finley, 77 Okla. 213, 187 Pac. 488; see Hazzard vs. Johnson, *supra*, In some cases the diligence required is measured by months rather than by years. And in some others a delay of two, three or four years has been held to be fatal. Patterson vs. Hewitt, 195 U. S. 309; Starkweather vs. Jenner, 216 U. S. 524; Bacon vs. Neill, 283 Fed. 717. Under the general equity principles, not the time when the fraud is committed, but when it is discovered, or might have been discovered by the exercise of ordinary diligence, fixes the time when the cause of action accrues. Tilden vs. Barber, 168 Fed. 591; Taylor vs. Salt Creek Co., *supra*. In Jackson vs. Jackson, 175 Fed. 719, a delay of three years in asserting an interest in oil lands was held laches.

[94] Jewell vs. Trilby Mines, 229 Fed. 298; Scruggs vs. Decatur Co., 86 Ala. 173, 5 So. 440; Great West Co. vs. Woodmas Co., 14 Colo. 90, 23 Pac. 908; Morrow vs. Mathew, 10 Ida. 423, 79 Pac. 196. When a suit is brought within the time limited by the statute of limitations the burden is upon the defendant to show, by demurrer or answer, that unusual conditions or extraordinary circumstances exist which require the application of the doctrine of laches. When suit is brought after the statutory time has elapsed, the burden is upon the plaintiff to show by suitable allegations in the complaint that it would be inequitable to apply it to his case. Stevens vs. Grand Central Co., 133 Fed. 28; Steinbach vs. Bon Homme Co., 152 Fed. 333; Morse vs. Smythe, 255 Fed. 981, 46 Colo. 199, 102 Pac. 1072.

[95] Wagner vs. Baird, 7 How. 234; Lansdale vs. Smith, 106 U. S. 391; Westerman vs. Dinsmore, 68 W. Va. 591, 71 S. E. 250. While the law imposes the requirement of reasonable promptness in all cases to avoid laches, it requires greater diligence and activity in seeking to rescind transactions with reference to oil values affected by extraordinary uncertainty and fluctuations as they are, than with reference to ordinary dealings. Minchew vs. Morris, — Tex. C. A. —, 241 S. W. 215. For instances of excusable delay, see Mexico-Wyoming Co. vs. Valentine, 237 Fed. 150; Stone vs. Marshall Co., 188 Pa. St. 602, 41 Atl. 748, 1119.

[96] O'Brien vs. Wheelock, 184 U. S. 482; Stevens vs. Grand Central Co., *supra* (94); Mexico-Wyoming Co., *supra* (95); Minnesota Co. vs. McGirr, 263 Fed. 482.

Because of his failure to prosecute the suit, the consequences are the same as if no suit had been begun.[97] In other words, a party is as much open to the charge of laches for the failure to prosecute a suit diligently as if he had unduly delayed its institution.[98]

§ 64. Injunction.

An injunction to prevent an alleged trespasser from drilling oil wells and appropriating and removing oil from the premises in controversy in effect permits the complainant to drill for, remove and market the oil from the land in dispute. If the complainant has no legal title to the land as claimed by the defendant and the defendant has in fact a duly approved oil lease from the rightful owner, the injunction might work an injustice to such lessee and the owner, but for the fact that the courts have ample authority to safeguard their interest if in a proper proceeding a probability of recovery is shown.[99]

§ 65. Removal of Machinery and Fixtures.

The parties to an oil and gas lease may by their contract stipulate what machinery and fixtures may be removed upon the termination of the lease. Such a stipulation is controlling.[100]

§ 66. Sale Under Foreclosure Proceedings.

An oil and gas lease executed subsequent to a mortgage will terminate upon the foreclosure of the mortgage, and a sale of the premises under the decree of foreclosure.[101]

§ 67. Deeds.

Independent estates may be carved out of the same land as where the owner of the surface grants only the right to the underlying minerals.[102]

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[97] Northrup vs. Browne, 204 Fed. 122; U. S. vs. Fletcher, 231 Fed. 326; Taylor vs. Salt Creek Co., *supra* [(93)]; Grand Lodge vs. Graham, 96 Iowa 615, 65 N. W. 842; see, also, Mackall vs. Casilear, 137 U. S. 556; Willard vs. Wood, 164 U. S. 525; O'Brien vs. Wheelock, *supra* [(96)].

[98] U. S. vs. Fletcher, 242 Fed. 818. Where the defendant has not been prejudiced and there is a reasonable excuse for the delay, the suit is not barred. Central Co. vs. Jersey City, 199 Fed. 245; see Porto Rico Co. vs. Conklin, 271 Fed. 570. Where a party interposing a defense of laches has contributed to or caused the delay, he can not take advantage of it. N. P. R. Co. vs. Boyd, 177 Fed. 804.

[99] Collier vs. Bartlett. — Okla. —, 175 Pac. 247; see Washburn vs. Gillespie, 261 Fed. 41; Advance Oil Co. vs. Hunt, *supra* [(9)]. A preliminary injunction should only be granted where injury to the property of plaintiff is imminent and, if committed, irreparable. And it generally will not be awarded where the plaintiff's right is not clear or, to turn the proposition around, where the wrong is not manifest. Courts of equity invariably, on a hearing for preliminary injunction, endeavor so far as possible to make such decree, however it may be framed, as will maintain the *status quo* until final hearing or judgment. Hicks vs. American Co., 207 Pa. St. 570, 57 Atl. 55; see, also, Pellissier vs. Whittier Co., 59 Cal. A. 1, 209 Pac. 593. The unlawful extraction of petroleum oil or gas from land, they being a part of the land, is an act of irreparable injury. Bettman vs. Harness, 42 W. Va. 433, 26 S. E. 271; Moore vs. Jennings, 47 W. Va. 181, 34 S. E. 793; see, also, U. S. vs. Dominion Oil Co., 241 Fed. 426.

[100] In re American Fork Co., 291 Fed. 746; see, also, Collins vs. Mt. Pleasant Co., 85 Kan. 483, 118 Pac. 54; see Wisconsin-Texas Co. vs. Clutter, *supra* [(60)] for a case in which no right was given to remove casing from the well.

[101] Mercantile Trust Co. vs. Sunset Road Co., 176 Cal. 461, 195 Pac. 466.

[102] Catron vs. South Butte Co., 181 Fed. 941; Stinchfield vs. Gillis, 96 Cal. 33, 30 Pac. 839; Smith vs. Jones, 21 Utah 270, 60 Pac. 1104; see note 106, *infra*. For rights of owner of surface as against owner of minerals thereunder, see West Pratt Co. vs. Dorman, and monographic note, 135 Am. St. Reps. 127. See, also, Vance vs. Clark, 252 Fed. 498; Midkiff vs. Colotn, 252 Fed. 424. The carving out of a separate estate in the oil and gas in land is a common occurrence in oil- and gas-producing fields. A reservation or exception of the minerals in a tract of land is a separation of the estate in the minerals from the lease of the surface, and it makes no difference whether the word used is "excepted" or "reserved." DeMoss vs. Sample, *supra* [(1)]; Mandle vs. Gharing, 256 Pa. St. 121, 100 Atl. 535.

§ 68. Construction of Deed.

A deed must be determined by the laws of the state in which the lands it conveys are situate, irrespective of where it may have been executed, or the grantors reside.[103]

§ 69. Abstract of Title.

A contract for the purchase of an oil and gas lease required the lessor to submit to a certain named attorney a complete abstract of title to the land and that the lease should take effect and the obligations of the parties accrue "only in case such attorney should approve the title to the land." The contract provided that the lessee should deposit in a bank fifteen hundred dollars as earnest money and on the failure of the lessee to comply with the contract in beginning work, as agreed, the money should be paid to the lessor as liquidated damages. Upon the submission of the abstract of the title the attorney disapproved of the title. The reasonable conclusion from the language of the contract is that in the event of the approval of the abstract the contract should be effectual and binding but in the event of the disapproval of the title should not take effect. The mutual obligations of the parties should accrue only in case of the approval of the title. A bank was not authorized to pay the deposit to the lessor after the disapproval of the title and the lessee was entitled to recover from the bank and the lessor. In an action by the lessor to enforce the sale after the title has been rejected by the attorney, the burden was upon the lessor to prove that the lessee or the attorney acted in bad faith in rejecting the title.[104]

§ 70. Income.

In legal effect the bonus, rentals, and royalty accruing under oil and gas leases are income from mineral resources. The Supreme Court of the United States has held that the bonus or down payment received by landowners at the time of making a lease is to be treated as a royalty, for the reason that it is income from the use of the mineral resources of the land.[105]

§ 71. Taxation.

Mining rights and privileges under an oil lease are subject to taxation

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[103] Plattner vs. Vincent, 187 Cal. 451, 202 Pac. 216; see, also, Rose's notes to McGoon vs. Scales, 76 U. S. 23. For construction of deed and agreement to develop mining property, see White vs. Hendley, 185 Cal. 614, 198 Pac. 22, 169 Pac. 710. For an elaborate discussion of the effect of a deed reserving a part of the royalty of all gas or oil or the proceeds therefrom, which may be produced from the deeded premises, see Dunlap vs. Jackson, *supra* (88); see, also, Dill vs. Rockwell, — Okla. —, 220 Pac. 620. It may be stated as a general proposition that if the deed or written instrument furnishes other sufficient means of identifying the property conveyed, the failure to state the town, county or state where the same is situate will not make the deed or instrument void nor inoperative. Miller vs. Hodges, — Tex. C. A. —, 260 S. W. 170. Where there is uncertainty in specific description, the quantity named may be of decisive weight. Ainsa vs. U. S., 161 U. S. 220; Producers Co. vs. Hanzen, 238 U. S. 338. If the property has a known descriptive name, it may be sufficiently described by such name. Glacier vs. Willis, 127 U. S. 471; Reed vs. Munn, 148 Fed. 737; Carter vs. Bacigalupi, 83 Cal. 187, 23 Pac. 361; Berquist vs. W. Virginia Co., 18 Wyo. 234, 106 Pac. 673. That a property is known by several names and only one of them is given is immaterial. Lebanon Co. vs. Con. Republican Co., 6 Colo. 371; Collins vs. McKay, 36 Mont. 123, 92 Pac. 295; see Shoshone Co. vs. Rutter, 87 Fed. 801.

[104] First Nat. Bank vs. Clay, — Okla. —, 177 Pac. 115; see, also, Merrill vs. Rocky Mt. Co., 26 Wyo. 219, 181 Pac. 972; St. Louis Co. vs. Nity, — Okla. —, 224 Pac. 982.

[105] Wright vs. Carter Oil Co., — Okla. —, 223 Pac. 835; and see Von Baumbach vs. Sargent Co., *supra* (3); U. S. vs. Biwabik Co., 247 U. S. 124; Work vs. U. S., 261 U. S. 352.

from and in addition to the interest or estate of the lessor,[106] whether the title be in the United States or in the state.[107]

§ 72. Insurance.

An insurance policy covering oil in tanks provided that the company should not be liable beyond the actual cash value of the property at the time of the loss and the loss shall be ascertained according to such actual cash value, with proper deductions for depreciation. On the loss of the oil insured the actual cash value was to be the measure of damages, but it could not exceed what it would cost the insured to replace it. The cash value of an article is the amount of cash for which it will exchange in fact; and the cash value is the market value for which an article will sell for in cash on the market. Where a state had a state corporation which fixed the price of oil and no one had a legal right to sell oil in the state for less than the price so established, this is sufficient to establish the cash value of the oil, especially in the absence of countervailing evidence.[108]

§ 73. State Inspection Laws.

A state may pass proper inspection laws for oils brought into its borders in interstate commerce. But a state may not impose burdens upon interstate commerce in the matter of oil inspection.[109]

§ 74. Pipe Lines.

A pipe line company is a common carrier,[110] may exercise the right of eminent domain,[111] is subject to control, and its rates to regulation, by the state.[112]

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[106] Each of separate layers of strata becomes a subject of taxation, levy and sale, precisely like the surface. Murray vs. Allred, 100 Tenn. 100, 43 S. W. 355; see, also, McGraw vs. Lakin, 67 W. Va., 385, 68 S. E. 27; Appeal of Colby, 184 Iowa 1104, 169 N. W. 443. There may be several estates in the same land owned by different persons, one owning the surface, another the timber, and a third the minerals underground, each being a separate estate and each may be separately taxed. N. P. R. Co. vs. Mjelde, 48 Mont. 287, 137 Pac. 386; Cobban Co. vs. Donlan, 51 Mont. 58, 149 Pac. 487; see, also, Stephens Co. vs. Mid-Kansas Co., — Tex. —, 254 S. W. 290; but see Indian Co., — Okla. —, 142 Pac. 997.

[107] Graciosa Oil Co. vs. Santa Barbara Co., 155 Cal. 140, 99 Pac. 483; see Barnes vs. Bee, 138 Fed. 476; Con. Coal Co. vs. Baker, 135 Ill. 545, 26 N. E. 651. A sale for taxes while the title still is in the United States is void, the land not being subject to taxation by the state. Secret Valley Co. vs. Perry, 187 Cal. 423, 202 Pac. 449. While unpatented, mining claim is not subject to taxation. Doyle vs. Austin, 47 Cal. 353. The possessory right thereto and the product from the location may be taxed and the lien enforced by a sale of the right of possession. The right of possession means the claim itself, that is, the right of possession of the land for mining purposes. The tax deed conveys merely such right without affecting the interest of the United States. Elder vs. Wood, 208 U. S. 226. An oil and gas lease by which the lessee is granted the privilege of drilling for and producing oil, if it can be found on the premises, is property and is regarded as a thing of value and is subject to taxation. Raydure vs. Board, 183 Ky. 84, 209 S. W. 19; see, generally, Large Oil Co. vs. Howard, 63 Okla. 143, 163 Pac. 537.

[108] Globe & Rutgers vs. Prairie Oil & Gas Co., 248 Fed. 458.

[109] Standard Oil Co. vs. Graves, 249 U. S. 389; see Pure Oil Co. vs. Minnesota, 248 U. S. 158; Bartels-Northern Oil Co. vs. Kackman, 29 N. Dak. 236, 150 N. W. 576; Castle vs. Mason, 91 Ohio St. 296, 110 N. E. 463. For a review of state inspection laws, see Red "C" Co. vs. Board, 222 U. S. 380.

[110] Prairie Co. vs. U. S., 204 Fed. 798. That a pipe line company may be a common carrier though it transports oil only for a corporation owning its capital stock, see Meischke-Smith vs. Wardell, 286 Fed. 785; see The Pipe Line Cases, 234 U. S. 562; and see Producers Co. vs. R. R. Comm., 251 U. S. 228, affirming 176 Cal. 499, 169 Pac. 59.

[111] Producers Co. vs. R. R. Comm., *supra* [110]; Consumers Co. vs. Harless, 131 Ind. 446, 129 N. E. 1062.

[112] Producers Co. vs. R. R. Comm., *supra* [110].

§ 75. Interstate Commerce.

The transportation of oil or gas from state to state through the medium of pipe lines is interstate commerce.[113] It is not the usual practice of railway companies to furnish tank cars for shippers of oil.[114]

[113] Public Utilities Comm. vs. Landon, 249 U. S. 245; see West vs. Kansas Co., 221 U. S. 229. The question whether particular commerce is interstate or intrastate is ordinarily determined by what is actually done and not by any mere billing or plurality of carriers. Where cars or tanks are in fact destined from one state to another, rebilling or reshipping en route does not of itself break the continuity of the movement nor require that any part be classified differently from the remainder. It is the essential character of the commerce, not the extent of local or other bill of lading. Western Oil Co. vs. Lipscomb, 244 U. S. 349; see, also, Landon vs. Public Utilities Comm., 242 Fed. 683; and see State vs. Landon, 100 Kan. 593, 165 Pac. 1112.

[114] Chicago Co. vs. Lawton Co., 253 Fed. 708; compare Illinois Co. vs. Mulberry Co., 238 U. S. 282; see Penn. Co. vs. Puritan Co., 237 U. S. 127.

APPENDIX—FORMS.

Form No. 1.

(The subjoined is an approved form of an oil and gas lease. It is commonly called the 'Texas Lease'.)

OIL AND GAS LEASE.

AGREEMENT, made and entered into the _____ day of _____ 19__, by and between_____ _____ of _____ County of _____, State of _____, part____ of the first part hereinafter called lessor (whether one or more) and _____, party of the second part hereinafter called lessee.

WITNESSETH, That the said lessor, for and in consideration of _____ DOLLARS cash in hand paid, receipt of which is hereby acknowledged, and of the covenants and agreements hereinafter contained on the part of lessee to be paid, kept and performed, ha____ granted, conveyed, demised, leased and let, and by these presents do___ grant, convey, demise, lease and let exclusively unto the said lessee, for the sole and only purpose of mining and operating for oil and gas, and of laying pipe lines, and of building tanks, power-stations and structures thereon to produce, save and take care of said products, all that certain tract of land situated in the County of _____, State of _____, Section _____, Township _____, _____Range, _____, _____, _____M., and containing _____ acres, more or less.

It is agreed that this lease shall remain in force for a term of _____ years from this date, and as long thereafter as oil or gas, or either of them, is produced from said land by the lessee.

In consideration of the premises the said lessee covenants and agrees:

1st. To deliver to the credit of lessor, free of cost, in the tanks or pipe lines to which he may connect his wells, the equal _____ part of all oil produced and saved from the leased premises.

2d. To pay the lessor _____ DOLLARS each year in advance, for the gas from each well where gas only is found, while the same is being used off the premises, and lessor to have gas free of cost from any such well for all stoves and all inside lights in the

principal dwelling house on said land during the same time by making his own connection with the well at his own risk and expense.

3d. To pay lessor for gas produced from any oil well and used off the premises at the rate of _____ DOLLARS per year, for the time during which such gas shall be used, said payments to be made each three months in advance.

If no well be commenced on said land on or before the _____ day of _____, 19___, this lease shall terminate as to both parties, unless the lessee on or before that date shall pay or tender to the lessor, or to the lessor's credit in the _____ Bank at _____, or its successors, which shall continue as the depository regardless of changes in the ownership of said land, the sum of _____ DOLLARS, which shall operate as a rental and cover the privilege of deferring the commencement of a well for _____ months from said date. In like manner and upon like payments or tenders the commencement of a well may be further deferred for like period of the same number of months successively. And it is understood and agreed that the consideration first recited herein, the down payment covers not only the privileges granted to the date when said first rental is payable as aforesaid, but also the lessee's option of extending that period as aforesaid, and any and all other rights conferred.

Should the first well drilled on the above described land be a dry hole, then, and in that event, if a second well is not commenced on said land within twelve months from the expiration of the last rental period for which rental has been paid, this lease shall terminate as to both parties, unless the lessee on or before the expiration of said twelve months shall resume the payment of rentals in the same amount and in the same manner as hereinbefore provided. And it is agreed that upon the resumption of the payment of rentals, as above provided, that the last preceding paragraph hereof, governing the payment of rentals and the effect thereof, shall continue in force just as though there had been no interruption in the rental payments.

If said lessor owns a less interest in the above described land than the entire and undivided fee simple estate therein, the royalties and rentals herein provided shall be paid the lessor only in the proportion which _____ interest bears to the whole and undivided fee.

Lessee shall have the right to use, free of cost, gas, oil and water produced on said land for his operations thereon except water from wells of lessor.

When requested by lessor, lessee shall bury his pipe lines below plow depth. No well shall be drilled nearer than 200 feet to the house or barn now on said premises. Lessee shall pay for damages caused by his operations to growing crops on said land. Lessee shall have the right at any time to remove all machinery and fixtures placed on said premises, including the right to draw and remove casing.

If the estate of either party hereto is assigned—and the privilege of assigning in whole or in part is expressly allowed—the covenants hereof shall extend to the assigns and successive assigns, but no change in the ownership of the land or assignment of rentals or royalties shall be binding on the lessee until after the lessee has been furnished a written transfer or assignment or a true copy thereof; and it is hereby agreed that in the event this lease shall be assigned as to a part or as to parts

of the above described lands and the assignee or assignees of such part or parts shall fail or make default in the payment of the proportionate part of the rents due from him or them, such default shall not operate to defeat or affect this lease in so far as it covers a part or parts of said lands upon which the said lessee or any assignee thereof shall make due payment of said rental.

Lessor hereby warrants and agrees to defend the title to the lands herein described, and agrees that the lessee shall have the right at any time to redeem for lessor, by payment, and mortgages, taxes or other liens on the above described lands, in the event of default of payment by lessor, and be subrogated to the rights of the holder thereof.

In TESTIMONY WHEREOF, We, in duplicate, sign, this the _____ day of _____, 19___.

Witness: _____

_____

_____

_____

For another form of lease see Washburn vs. Gillespie, 261 Fed. 42.

Form No. 2.

ASSIGNMENT OF LEASE.

(Precedent in Ratcliff vs. Paul, — Kan. —, 220 Pac. 279.)

Know all men by these presents: That_____, on this_____ day of_____, for and in consideration of one dollar and other considerations, the receipt whereof is hereby acknowledged, do hereby assign, sell, transfer and set over unto_____all_____right, title, and interest, in and to an oil and gas mining lease, the land assigned being described to wit: (Description) (Record reference to lease). That _____ are the lawful owner__ and holder__ of said oil and gas mining lease, and the same is free from all incumbrances and that_____have good right and title to sell and assign the same. Witness _____hand__ the day and year first above written.

I, _____, wife of the said_____, for the considerations aforesaid, do hereby join in this assignment and hereby release and relinquish all my rights of dower and homestead in and to the lease and rights above assigned and transferred.

Form No. 3.

EXTENSION OF LEASE.

(Precedent in Pellissier vs. Pan-American Co., 41 Cal. A. D. 415, 217 Pac. 570.)

The lessor__ hereby agree__ that in lieu of commencing and prosecuting operations, for the drilling of a well upon said land described in and leased by said indenture of lease, the lessee__ may, if_____shall so elect, pay to the lessor__ on the_____day of each and every calendar month, for an additional period of_____months, commencing on the _____day of_____, as and for rental for said land the

sum of_____dollars per month, and such payments so made from month to month, shall relieve the lessee__ of and from all obligations to commence or prosecute any drilling or other operations upon said land during such month. In witness whereof the said lessor__ ha__ hereunto set_____hand__ the_____day of_____State of _____,

Form No. 4.

CONJOINT DEED AND LEASE.

(Precedent in Wright vs. Carter Oil Co., — Okla. —, 223 Pac. 835.)

State of_____, County of_____. ss.

Know all men by these presents: That_____and_____, parties of the first part, in consideration of the sum of_____dollars, in hand paid, the receipt of which is hereby acknowledged, do hereby grant, bargain, sell and convey unto_____, the party of the second part, an undivided_____interest in and to all of the mineral rights, including oil, natural gas and petroleum in_____ (description) in_____County, State of_____, with the right and privilege to the grantors and grantee, or either of them, to go on said land and explore, operate, drill and mine for oil and gas, and other minerals, and to sell the products thereof and divide the same or the proceeds thereof as their interests appear and as provided herein. It is expressly understood, however, that this grant is subject to a certain oil and gas lease now on said premises, dated_____, made and executed by the grantors to the_____Company.

Signed and delivered this the_____day of_____.

Witnesses:

Form No. 5.

*OIL WELL DRILLING CONTRACT.

(Precedent in Cook vs. Columbian Co., 144 Cal. 670, 78 Pac. 287.)

This agreement, made and entered into this _____ day of _____, 19___, between _____, of _____, the party of the first part, and _____, of _____, the party of the second part, Witnesseth:

That the party of the second part will furnish at his own cost and expense all the machinery, tools, paraphernalia and materials of all kinds, including labor, fuel, water, and any and all things of whatsoever kind and nature that may be necessary and needful (except casing, pipe and shoes) to properly perform the work of drilling or boring not less than _____ feet of hole or wells, and to drill or bore the same at any one or more places on the following described land situate, lying and being in the County of _____, State of _____, and more particularly described as follows, to wit:

*NOTE.—Under the provisions of an act to prevent injury to oil, gas or petroleum-bearing strata or formations by the penetration or infiltration of water therein, it is provided in California that any well drilled and abandoned in violation of the terms of the statute is a public nuisance and may be abated by appropriate action of the board of supervisors of the county. The expenses so incurred are a charge against the owner of the well and a lien upon the well. Interference with official action is a misdemeanor. Cal. Stats. 1909, p. 586; see, also, Stats. 1921, Chap. 912, Sec. 16.

For capping of wells to prevent wasteful escape of natural gas into the atmosphere see Stats. 1911, p. 499.

(Description)

and may be desired and designated by the party of the first part, for the agreed price per foot sunk, as shown and set forth in the following scale of prices, at different depths up to _____ feet, and in accordance with the further terms and conditions herein contained. Provided, however, that in case the drilling of any well shall be stopped by the party of the first part for any cause after it has been begun, that the party of the first part will pay the net cost of moving the drilling outfit to any other place on the said property where another well is to be started, in addition to the amount earned for the number of feet sunk in accordance with the said scale of prices per foot and that should work be stopped on any well for any cause, after a depth of _____ feet has been sunk, then the said party of the second part shall move the rig at his own cost and expense to the place designated by the party of the first part. That in case of abandonment of any well or wells for any cause the party of the second part will pull and remove, in a careful manner, all casing, pipe and fittings used in said well or wells that can be got out by a reasonable and faithful effort by the use of all appliances and tools ordinarily used in performing such work.

That all casing, pipe and shoes of the proper sizes necessary to be used in the well or wells will be furnished and delivered on the ground by the party of the first part and shall be of such sizes as such party may select, and the same shall be properly inserted and used in the wells by the party of the second part and carried to the bottom, if possible, without diminishing the size except in cases where it is found absolutely unavailable after the use of under-reamers and other appliances, as may be necessary and proper for keeping the whole in proper shape.

That in case a body of asphaltum be encountered at any considerable depth and it is found impossible after a faithful and reasonable effort so to do that it can not be drilled through nor penetrated by the use of any of the known tools and appliances, then the said well will be considered as completed and a settlement made in full for the depth drilled according to the said scale of prices; provided, however, that the party of the first part shall have full and free right and privilege to use and operate the machinery and outfit of the party of the second part at his own cost and expense for a period not to exceed _____, or until satisfied that the hole can not be sunk any deeper.

That in case oil, gas or asphaltum shall be found at any depth in any well and the party of the first part shall elect to stop drilling in such well, the party of the second part shall properly test the well and leave the same in condition ready for the pump or other working appliance before moving the rig and outfit away.

It is understood by and between both parties hereto that this contract is for a total of _____ feet of hole or wells, and that the party of the second part agrees to put down any one hole to a total depth of _____ feet, if the ground is such that it can possibly be done, by reasonable effort, or that he will stop the drilling of any well at any depth, as directed by the party of the first part and in accordance with the said scale of prices per foot sunk, and the terms and conditions herein contained.

That the party of the first part will pay, or cause to be paid, to the party of the second part the amount earned for each foot of hole sunk in accordance with the said scale of prices at times and as follows, to wit:

. An advance sum of _____ dollars, when the rig and outfit are on the ground and ready to commence the work of drilling; _____ per cent of the amount earned as per scale when the well has been sunk to a depth of _____ feet and a like _____ per cent of the amount earned at the completion of each _____ feet until the well is either completed or abandoned, or the work stopped by the party of the first part, when the balance in full shall be paid, after deducting the said advance payment of _____ dollars.

Done in duplicate, the day and year first above written.

NOTE.—Federal and state leases on oil and other mineral lands will be covered in a future issue of 'Mining in California.'—Editor.

NOTE ON ANDALUSITE FROM CALIFORNIA.

A New Use and Some Thermal Properties.*

By Albert B. Peck.[1]

The andalusite described here is found at an elevation of 10,000 feet on the southwestern slope of White Mountain in the White Mountains of the Inyo Range, Mono County, California. The deposit itself is located across a canyon about two miles east and north of an occurrence described by Knopf.[2] The andalusite reported by Knopf, however, is at present of no commercial value owing to the fact that it carries too large amounts of quartz.

MINERALOGY.

Occurrence and Physical Properties.

The main mass of the andalusite rock can probably best be described as coarse granular, and it is generally of a gray or light pinkish brown color. On exposed surfaces the color is yellow brown due to oxidation.

The texture of the rock varies greatly. Many large fragments show a very distinctly coarse radial or columnar structure, definite rough crystals four or five inches in length being noted. At the other extreme are smaller areas which have a very fine granular texture, sugary in appearance and very friable, breaking down readily into a fine sand. While the material is generally quite compact there are occasional large cavities in the mass, and in these are sometimes found excellent groups of large coarse crystals at times reaching five inches or more in length.

The color of the material shows variation also. Crystals are generally white on the exterior but when broken show directly beneath the surface a pale apple green color. Columnar or radial masses also show green or gray color but granular masses are usually white, gray, or pinkish brown. This latter color is in reality due to inclusions of scattered rutile grains or crystals, as can readily be observed when examined microscopically.

Crystallography.

The crystals appearing in cavities are generally rather simple in form but of uncommon habit for andalusite. This probably accounts for the fact that of all those to whom a group has been shown, no one has as yet named the crystals as andalusite. The crystals are usually covered with a thin white coating which is dull and somewhat rough, so that accurate measurements of the crystal angles are impossible. Contact goniometer measurements, however, show sufficiently close relation to the theoretical values to establish the forms present. The crystals usually occur in more or less parallel groups terminated at one end only and are also attached to each other by the prism faces so that the prism zone is generally only partly complete.

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*Read before the annual meeting of the Mineralogical Society of America at Washington, D. C., December, 1923. To appear in the American Mineralogist, June 1924.

[1] Mineralogical Laboratory, University of Michigan.

[2] Journal Wash. Acad. Sc., 7, 549 (1917).

Figure 1 shows the form of a typical crystal. The predominant prism is k(210) and the end of the form is terminated by the dome r(101). Measurements of the angles are as follows:

	Observed	Calculated	
kk′′′	62°–51°	52°	30′
rr′	72	70	56

The prism faces on the larger crystals are somewhat rounded, hence the variation in the angles noted for this form. Faces of the smaller

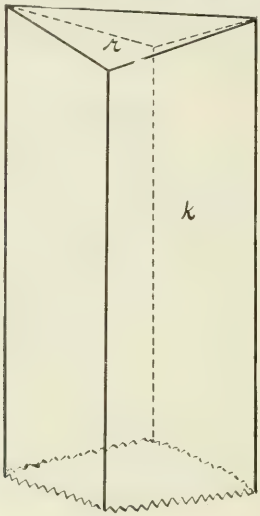

FIG. 1

crystals, however, give values close to those calculated for the form. Owing to the fact that the ratio of a:b in andalusite is nearly 1:1, the angles for the forms (210) and (120) are very similar. It was necessary therefore in this case to make a thin section parallel to the base and determine the position of the optic plane. This was found to be in the short diagonal and being parallel to the a-axis, the prism then is established as k(210). It follows that the dome is r(101) and not s(011), these two forms also being very similar in their angles.

Chemical Composition.

On the whole the rock material is a rather pure andalusite with comparatively small amounts of several other minerals. During mining, the material is constantly checked by specific gravity determinations on

a Jolly balance. Samples are taken over the face of the working and if favorable, the material is broken out, carefully hand selected, and sacked. Generally it runs at least 75–85 per cent andalusite upon microscopic examination. A typical chemical analysis from a sample representing a carload shipment recalculated to an Al_2SiO_5 basis will show over 90 per cent Al_2SiO_5. Such an analysis follows:

SiO_2	33.78%		Equivalent to	
Al_2O_3	56.89		Al_2SiO_5	94.18%
H_2O	0.37		SiO_2	0.22
Ign. loss	3.67		Others	5.60
other deter. constituents	5.37	100.08		

The fact that the chemical analysis generally shows higher Al_2SiO_5 than is indicated by the microscopic examination is due to the very general presence of corundum in the material. In no case do the associated minerals assume any large proportion over any considerable area although locally they may occasionally outweigh the andalusite.

Associates.

The associates of the andalusite are also deserving of mention, especially because several are counted among the less common minerals.

Lazulite is perhaps the most unusual mineral associated with the andalusite. It occurs in small blue-green veinlets or masses scattered through the mass. Optically it shows a distinct light blue pleochroism. Chemical analysis usually shows small amounts of P_2O_5 present in the rock.

Pyrophyllite is another uncommon mineral found with the andalusite. It occurs in crusts of radial fibers on the walls of cracks or as radial masses in small cavities. Owing to its chemical composition, as soon as its water is lost it takes on nearly the same composition as andalusite and hence can hardly be considered as an impurity.

Muscovite also occurs in much the same manner as pyrophyllite and is somewhat more abundant but at no time reaches large proportions. It occurs in distinct plates, usually in divergent groups.

Corundum is a rather common associate of the granular andalusite and is usually deep sapphire blue in color. It is generally in small scattered plates or grains but occasionally may form lenses two or three inches in size. According to observation thus far it is always blue in color. In a few instances crystals of andalusite with blue corundum centers have been noted. For manufacturing purposes a small amount of corundum is favorable to the neutralization of the effect of any excess quartz in the rock.

Rutile is a rather constant associate, largely as microscopic inclusions in the andalusite. At times small free crystals can be found. The constant association of rutile and the blue color of the corundum would seem to confirm the theory that the color of sapphire is due to the presence of TiO_2.

Pyrite is sometimes found locally, especially near open veins. When near the surface it has often weathered leaving a stained and porous rock.

The absence of quartz is very noticeable. It is almost never found in the andalusite proper but is confined to veins crossing the mass.

Barite also has been noted a few times, one large right angled twin having been found.

Lazurite also has been found, not in the andalusite but in veins of milky quartz adjacent to the mass. It is of interest to note that Knopf points out that the occurrence examined by him across the canyon and to the southwest was first staked as a silver mine, the bright blue lazurite being thought to be AgBr. After assay showed no silver the claim was dropped. Later the brown andalusite mass was staked again, this time under the impression that it was apatite. This in turn proved valueless and was relinquished.

USE.

This deposit of andalusite serves as an extremely good example of a comparatively useless, rare, or 'museum' mineral first becoming common enough to be available on a commercial scale, because it has heretofore been observed only in small scattered masses or crystals, and second, at the same time finding a commercial use, until at present about 70 tons per week are being mined. Both of these have been the result of patience and thorough scientific research.

For some years the manufacture of the porcelain core of the most modern type of automobile spark plug has tended toward the formation during the burning process of an increasingly higher content of a crystalline compound, thought to be an 'artificial sillimanite.' Bowen[1] has recently shown, however, that in artificial melts of Al_2O_3 and SiO_2 in varying proportions the compound $Al_2O_3.SiO_2$ corresponding to natural sillimanite does not form as has been stated in the earlier work on the subject but that the compound formed has a composition $3Al_2O_3.2SiO_2$. Not only is this compound similar chemically to sillimanite but its physical and optical properties are remarkably similar as well.[2]

This 'artificial sillimanite' produced in ceramic ware results from the molecular changes taking place in clay under the influence of heat and various fluxes. The highest content of 'sillimanite' has been accomplished by introducing into the unburned body artificially prepared 'sillimanite' in the form of a calcine—a mixture of clay, alumina, and fluxes, heated to a high temperature of about 1500° C. This was of course an expensive method to obtain the desired end although it has been used for several years in the manufacture of spark plugs.

In order to eliminate the necessity of making an 'artificial sillimanite', the natural way out was to turn to one of the natural Al_2SiO_5 compounds, namely, sillimanite, andalusite, or cyanite, but here the difficulty of obtaining any of these in sufficiently large quantities and in a pure state presented itself until the California andalusite deposit was located.

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[1] N. L. Bowen and J. W. Greig, J. Am. Cer. Soc., 7, 238-54 (1924).

[2] In the original manuscript of the present paper the writer regarded the crystalline compound formed by the inversion of andalusite and cyanite and the crystals formed in porcelain as sillimanite, following the earlier work of the Geophysical Laboratory on the system $Al_2O_3.SiO_2$. Since the announcement of the work of Bowen and Greig it has been necessary in several cases to change 'sillimanite' to the new compound '$3Al_2O_3.2SiO_2$.' This statement is made so that full credit may be given to them for the facts they have discovered and the writer's sincere thanks are due Dr. Bowen for his kindness in allowing this use of his manuscript before its actual publication.

Careful research was then able to substitute this natural material for the 'artificial sillimanite' with the result that not only was the manufacture less expensive but also that resulting article was better than the previous one.

Thermal Changes.

Although the material is introduced into the clay body of the unburned porcelain core as andalusite, certain changes take place during the burning process and as a result of these there is present no andalusite in the finished article but all of the andalusite undergoes a molecular change to a compound of the composition $3Al_2O_3.2SiO_2$ with excess of a glass highly siliceous in composition.

This change is quite definite, taking place sharply and at a definite temperature. Under manufacturing conditions this temperature is in the neighborhood of cone 13 on the Seger scale (theoretically equal to 1390° C but actually probably considerably lower).[3]

Of interest from the microscopic standpoint is the behavior of andalusite during this change. Up to the inversion point andalusite retains all of its original optical properties except for the formation of small glass-like inclusions which apparently represent the fusion of included impurities. At the inversion point the clear homogeneous grains of andalusite give way to grains composed of fibrous or columnar crystals, each crystal parallel to the adjacent one with a narrow strip of glass between. The result is instead of a clear grain, a grain composed of a group of parallel crystals having all of the optical properties of $3Al_2O_3.2SiO_2$, with glass between each. Traces of the remains of such structures can sometimes be seen in a section of a finished spark plug core.

Cyanite also changes to $3Al_2O_3.2SiO_2$ and glass under heat but at a lower temperature of about cone 11 (theoretically 1350° C). The structure developed is also different from that shown by the change in andalusite. Cyanite yields a body consisting of groups of interlocking fibers of $3Al_2O_3.2SiO_2$ which are not parallel over any considerable length. Along with these are areas of glassy matter, generally more abundant than in the andalusite and due no doubt to the fact that cyanite is less pure as a rule than andalusite. Cyanite has higher specific gravity therefore more substance per unit volume, which when breaking up would yield more matter from each previous unit but should this change the relative amounts?

The fact that andalusite changes to $3Al_2O_3.2SiO_2$ at a temperature considerably below the final temperature to which the porecelain is burned has a very practical value because in this change from andalusite to $3Al_2O_3.2SiO_2$ and excess siliceous glass there is an increase in specific gravity and a consequent decrease in volume. This volume change tends to produce strains in the porcelain, which can be absorbed if the inversion takes place well below the final burning temperature. If this were not true and the change took place near the final temperature, the decidedly weaker porcelain might result.

Incidentally, during this inversion the andalusite does not outwardly break down and lose its original form, so that good artificial pseud-

[3] The statements made here are purely provisional. Investigation of the changes with temperature is to be made in more detail at a later date.

omorphs of this mixture of $3Al_2O_3.2SiO_2$ and glass after andalusite is readily obtained by simply heating for a sufficiently long period above the inversion temperature. This can not be done with cyanite because the expansion at the inversion point is so great that the cyanite breaks down into a chalky friable mass.

The writer here wishes to acknowledge his sincere thanks to Dr. J. A. Jeffery, president, and Mr. F. H. Riddle, research director of the Champion Porcelain Company, whose interest and cooperation have made this note possible.

NOTE.—The foregoing paper was received through the courtesy of Dr. Joseph A. Jeffery, president of the Champion Porcelain Company, and published by permission of Professor Peck. Dr. Jeffery adds, in his letter accompanying:

"It just occurred to me that you might be interested in knowing that the pyrophyllite possesses very valuable properties which aid us very greatly in the processing of the material through the plant. It is not only valuable in the wet-grinding process, but also greatly assists in maintaining a uniform moisture content during the working and pugging operations."—EDITOR.

ADMINISTRATIVE DIVISION.

WALTER W. BRADLEY, Deputy State Mineralogist.

Personnel.

The State Mining Bureau and particularly the Petroleum and Gas Department has been signally honored in the appointment of Mr. R. D. Bush, state oil and gas supervisor, by the President of the United States, to be a member of a commission of three to study and report on the Naval Oil Reserves and the leases thereon. The appointment will not require Mr. Bush to sever his connections with the State Mining Bureau.

New Publications.

During the period covered by this issue (January 15th to April 15th) the following Bureau publications have been made available for distribution:

Mining in California (quarterly), January 1924, being Chapter No. 1, of State Mineralogist's Report XX. Price 25 cents.
Summary of Operations, California Oil Fields; Vol. 9, Nos. 4, 5, 6 and 7, October, November, December, 1923, and January, 1924, respectively.
Commercial Mineral Notes; Nos. 10, 11, 12, January–March, inclusive.
These 'notes' carry the lists of 'mineral deposits wanted' and 'minerals for sale,' issued in the form of a mimeographed sheet, monthly. It is mailed free of charge to those on the mailing list for 'Mining in California.'

Owing to the very considerable increase in our mailing list for 'Mining in California,' which had grown beyond the ability of the present funds of the State Mining Bureau to pay the printing bills without additional revenue, it became necessary to place a subscription price on this quarterly of 25 cents per issue, or $1 per year paid in advance.

Mail and Files.

The Bureau maintains, in addition to its correspondence file, a mine report file which includes reports on some 7500 mines and mineral properties in California. Also there is available to the public a file of the permits granted to mining and oil corporations by the State Commissioner of Corporations.

During the period of January 15–April 15, there were 2091 letters received and answered at the San Francisco office alone, covering a wide range of subjects concerning prospecting, mining and developing mineral products, reduction problems, and marketing of refined products.

DIVISION OF MINERALS AND STATISTICS.

Statistics, Museum, Laboratory.

WALTER W. BRADLEY, Deputy State Mineralogist.

STATISTICS.

California continues to produce commercially, as for a number of years past, at least fifty different mineral substances, the total annual value of which has averaged over $250,000,000 the last four years. The estimated value for 1923, as shown in the January issue of 'Mining in California' (see page 50 *ante*), was $270,472,000.

At the present writing (April 15), reports are in hand from most of the producers. Data for several substances are now complete and have been compiled, being presented herewith.

The data at hand indicate that there was no production in California in 1923 of the following substances, which have at one time or another in the past been on the active list here: Antimony, bismuth, cadmium, fluorspar, graphite, lithia, mica, molybdenum, serpentine, slate, strontium, and tin. In addition to the above, there are potential deposits of ores of the following which have not as yet yielded a commercial output: aluminum, arsenic, cobalt, nickel, nitrates, and vanadium.

BARYTES.

The output of crude barytes in California during 1923 amounted to a total of 2925 tons valued at $16,058 f. o. b. rail-shipping point, as compared with 3370 tons valued at $18,925 in 1922. The 1923 product came mainly from Nevada County, with smaller amounts from Mariposa and Shasta counties, and was consumed principally in the manufacture of lithopone. More than half of the total tonnage of barytes utilized in the United States is taken in the manufacture of lithopone, which is a chemically-prepared, white pigment containing approximately 70 per cent barium sulphate and 30 per cent zinc sulphide. This is one of the principal constituents of 'flat' wall paints.

Total Barytes Production of California.

The first recorded production of barytes in California, according to the statistical reports of the State Mining Bureau, was in 1910. The annual figures are as follows:

Year	Tons	Value	Year	Tons	Value
1910	860	$5,640	1918	100	$1,500
1911	309	2,207	1919	1,501	18,065
1912	564	2,812	1920	3,029	20,795
1913	1,600	3,680	1921	901	4,809
1914	2,000	3,000	1922	3,370	18,925
1915	410	620	1923	2,925	16,058
1916	1,606	5,516			
1917	4,420	25,633	Totals	23,595	$129,260

BITUMINOUS ROCK.

Small amounts of bituminous rock are still occasionally used for road dressing in those districts adjacent to available deposits, though the

manufacture of asphalt at the oil refineries has almost eliminated the direct use of the native material. During 1923, a total of 2945 tons valued at $11,780 was shipped from quarries in Santa Barbara and Santa Cruz counties, compared with 4624 tons and $13,570 in 1922. This material is essentially an uncemented sandstone which is saturated with and held together by a natural asphaltic constituent probably the residue from the evaporation of a petroleum deposit.

Bituminous Rock Production of California, by Years.

The following tabulation shows the total amount and value of bituminous rock quarried and sold in California, from the records compiled by the State Mining Bureau, annually since 1887:

Year	Tons	Value	Year	Tons	Value
1887	36,000	$160,000	1906	16,077	$45,204
1888	50,000	257,000	1907	24,122	72,835
1889	40,000	170,000	1908	30,718	109,818
1890	40,000	170,000	1909	34,123	116,436
1891	39,962	154,164	1910	87,547	165,711
1892	24,000	72,000	1911	75,125	117,279
1893	32,000	192,036	1912	44,073	87,467
1894	31,214	115,193	1913	37,541	78,479
1895	38,921	121,586	1914	66,119	166,618
1896	49,456	122,500	1915	17,789	61,468
1897	45,470	128,173	1916	19,449	66,561
1898	46,836	137,575	1917	5,590	18,580
1899	40,321	116,097	1918	2,561	9,067
1900	25,306	71,495	1919	4,614	18,537
1901	24,052	66,354	1920	5,450	27,825
1902	33,490	43,411	1921	8,298	43,192
1903	21,944	53,106	1922	4,624	13,570
1904	45,280	175,680	1923	2,945	11,780
1905	24,753	60,436			
			Totals	1,175,770	$3,617,233

BORATES.

During 1923, there was produced in California a total of 118,601 tons of borate materials, compared with a total of 74,998 tons for the year 1922. The material shipped included crude and selected colemanite ores from Inyo, Los Angeles, and San Bernardino counties, varying from 18.29% to 28.24% anhydrous boric acid ('A. B. A.'), also crystallized borax recovered from evaporation of brines at Searles Lake, San Bernardino County.

As the crude ore is not sold, as such, and is almost entirely calcined before shipping to the refinery for conversion into the borax of commerce, it is difficult to arrive at a valuation of the crude ore as mined. For this reason and the fact that the material varied in boric acid content, we have recalculated the tonnage to a basis of 40% A. B. A., which is approximately the average A. B. A. content of the colemanite material after calcining for shipment to the refinery. A valuation of 50¢ per unit of 'anhydrous boric acid' was reported for the calcined material. Recalculated as above, the 1923 production totals 62,667 tons valued at $1,893,798, an increase over the similar figures for 1922 which were 39,087 tons and $1,068,025.

Total Production of Borate Materials in California.

The total production of borate materials in California is shown in the following table:

Year	Tons	Value	Year	Tons	Value
1864	12	$9,478	1894	5,770	$807,807
1865	126	94,099	1895	5,959	595,900
1866	201	132,538	1896	6,754	675,400
1867	220	156,137	1897	8,000	1,080,000
1868	32	22,384	1898	8,300	1,153,000
1869			1899	20,357	1,139,882
1870			1900	25,837	1,013,251
1871			1901	22,221	982,380
1872	140	89,660	1902	[a]17,202	2,234,994
1873	515	255,440	1903	34,430	661,400
1874	915	259,427	1904	45,647	698,810
1875	1,168	289,080	1905	46,334	1,019,158
1876	1,437	312,537	1906	58,173	1,182,410
1877	993	193,705	1907	53,413	1,200,913
1878	373	66,257	1908	22,200	1,117,000
1879	364	65,443	1909	16,628	1,163,960
1880	609	149,245	1910	16,828	1,177,960
1881	690	189,750	1911	50,945	1,456,672
1882	732	201,300	1912	42,135	1,122,713
1883	900	265,500	1913	58,051	1,491,530
1884	1,019	198,705	1914	62,500	1,483,500
1885	942	155,430	1915	67,004	1,663,521
1886	1,285	173,475	1916	103,523	2,409,375
1887	1,015	116,689	1917	109,944	2,561,958
1888	1,405	196,636	1918	88,772	1,867,908
1889	965	145,473	1919	66,791	1,717,192
1890	3,201	480,152	1920	127,065	2,794,206
1891	4,267	640,000	1921	50,136	1,096,326
1892	5,525	838,787	1922	[b]39,087	1,068,025
1893	3,955	593,292	1923	66,667	1,893,798
			Totals	1,379,679	$46,821,508

[a]Refined borax. [b]Recalculated to 40% 'anhydrous boric acid' equivalent beginning with 1922.

CEMENT.

Cement is the most important single structural material in the output of this state. During 1923, there was produced a total of 10,825,405 barrels, valued at $25,999,203 f. o. b. plant, being an increase both in quantity and value over that of any previous year in the history of the cement industry in California. As in the preceding two years, the output came from nine operating plants in seven counties, and in 1923 employing a total of 3448 men.

The three plants in San Bernardino County, in 1923, made a total of 3,554,764 barrels of cement, valued at $8,478,612, the balance of the state's product coming collectively from a single plant in each of the following counties: Contra Costa, Kern, Riverside, San Benito, Santa Cruz, and Solano. A tenth plant is at present under construction at Merced, in Merced County, and will probably be in operation before the close of the current year.

Cement Production of California by Years.

Annual production of cement in California has been as follows:

Year	Barrels	Value	Year	Barrels	Value
1891	5,000	$15,000	1908	1,629,615	$2,359,692
1892	5,000	15,000	1909	3,779,205	4,969,437
1893			1910	5,453,193	7,485,715
1894	8,000	21,600	1911	6,371,369	9,085,625
1895	16,383	32,556	1912	6,198,634	6,074,661
1896	9,500	28,250	1913	6,167,806	7,743,024
1897	18,000	66,000	1914	5,109,218	6,558,148
1898	50,000	150,000	1915	4,918,275	6,044,956
1899	60,000	180,000	1916	5,299,507	6,210,293
1900	52,000	121,000	1917	5,790,734	7,544,282
1901	71,800	159,842	1918	4,772,921	7,969,909
1902	171,000	423,600	1919	4,645,289	8,591,990
1903	640,868	968,727	1920	6,709,160	14,962,945
1904	969,538	1,539,807	1921	7,404,221	18,072,120
1905	1,265,553	1,791,916	1922	8,962,135	16,524,056
1906	1,286,000	1,941,250	1923	10,825,405	25,999,203
1907	1,613,563	2,585,577			
			Totals	100,278,892	$166,236,165

Plant of Monolith Portland Cement Company, at Monolith, Kern County, California.

CHROMITE.

Chromic iron ore, or chromite, to the amount of 78 short tons of all grades (or 84 tons, recalculated to a basis of 45% Cr_2O_3), valued at $1,658 f. o. b. shipping point, was sold in California during the year 1923. The ore shipped analyzed from 45% to 50% Cr_2O_3 and came from mines in Placer and San Luis Obispo counties, being utilized for refractory purposes.

As will be noted from the tabulation below, chromite mining in California since the World War has all but become extinguished; and the

immediate future is not encouraging, unless a local or Pacific Coast market develops for it. Development of the steel industry and the resumption of copper smelting may create some demand for California chromite.

Total Chromite Production of California.

Production of chromite in California began, apparently, about 1874, principally in San Luis Obispo County. There was considerable activity from 1880 to 1883, inclusive, and a total of 23,238 long tons (or 26,028 short tons), valued at $329,924 was shipped from that county up to the beginning of 1887. Some ore also was shipped from the Tyson properties in Del Norte County. The tabulation herewith shows the output of chromite in California, annually, including the earliest figures so far as they are available. The figures from 1887 to date are from the records of the State Mining Bureau:

Year	Tons	Value	Year	Tons	Value
1874-1886 (San Luis Obispo Co.)	26,028	$329,924	1905	40	$600
1887	3,000	40,000	1906	317	2,859
1888	1,500	20,000	1907	302	6,040
1889	2,000	30,000	1908	350	6,195
1890	3,599	53,985	1909	426	5,309
1891	1,372	20,580	1910	749	9,707
1892	1,500	22,500	1911	935	14,197
1893	3,319	49,785	1912	1,270	11,260
1894	3,680	39,980	1913	1,180	12,700
1895	1,740	16,795	1914	1,517	9,434
1896	786	7,775	1915	3,725	38,044
1897			1916	48,943	717,244
1898			1917	52,379	1,130,298
1899			1918	73,955	3,649,497
1900	140	1,400	1919	*4,314	97,164
1901	130	1,950	1920	1,770	43,031
1902	315	4,725	1921	347	6,870
1903	150	2,250	1922	379	6,334
1904	123	1,845	1923	84	1,658
			Totals	242,374	$6,412,485

*Recalculated to 45% Cr_2O_3, beginning with 1919.

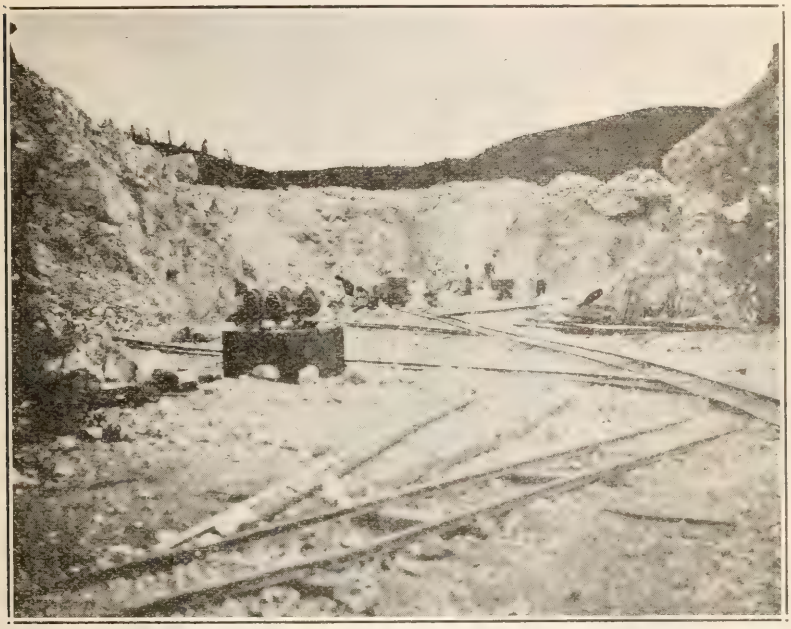
MAGNESITE.

The production of magnesite in California during 1923 amounted to a total of 73,963 tons of crude ore valued at $946,643. Only a small part of it was sold 'crude,' however, as it is practically all shipped in the calcined form. The reports at hand show a total of 30,294 tons shipped calcined, of which 3475 tons were dead-burned and sold for refractory purposes, the balance going to the plastic trade. From 2 to 2½ tons of crude material are mined to make one ton of the calcined. The 1923 output is an increase both in quantity and value over the 1922 figures of 55,637 tons crude valued at $594,665.

The more important producing properties in 1923 were: Maltby No. 1 (Western Magnesite Development Company, operated under lease by C. S. Maltby) on Red Mountain, Santa Clara County; and the Sierra Magnesite Company's group near Porterville, Tulare County; followed, in order, by the Sampson Peak Mine (Maltby No. 3), San Benito

County, Maltby No. 2 in Chiles Valley, Napa County, and the California Magnesite Company (old Harker mine) at Porterville. Lesser amounts were reported mined in Stanislaus, Tuolumne and Fresno counties, in the order named. Descriptions of recent operations at most of the above-mentioned properties were given by the writer, in the January issue of 'Mining in California'.[1]

The increase in value for 1923 is due in part to the somewhat higher prices prevailing as compared to 1922. On the whole, the magnesite industry is in a fairly satisfactory condition; the market is firm, and the use of this material, particularly the plastic form, is increasing on the Pacific Coast. Because of high freight rates, California can not



Open cut at Sampson Peak (Maltby No. 3) Magnesite Mine, near New Idria, San Benito County, California.

compete in the Atlantic seaboard states with foreign importations, but can at least hold its own as far east as the Mississippi River, under present conditions.

Distribution of the 1923 product, by counties, was as follows:

County	Tons	Value
Santa Clara	36,390	$472,620
Tulare	24,058	298,272
Fresno, Napa, San Benito, Stanislaus, Tuolumne*	13,515	175,751
Totals	73,963	$946,643

*Combined to conceal output of a single operator in each.

[1] See pp. 23, 26-31, *ante*.

Total Magnesite Production of California.

The first commercial production of magnesite in California was made in the latter part of 1886 from the Cedar Mountain district,[1] southeast of Livermore, Alameda County. Shipments amounting to 'several tons' or 'several carloads' were sent by rail to New York; but there is apparently no exact record of the amount for that first year. The statistical records of the State Mining Bureau began with the year 1887, and the table herewith shows the figures for amount and value, annually, from that time. Shipments of magnesite from Napa County began in 1891 from the Snowflake Mine; from the Red Mountain deposits in Santa Clara County, in 1899; and from Tulare County in 1900.

Production of Magnesite in California, Since 1887.

Year	Tons	Value	Year	Tons	Value
1887	600	$9,000	1906	4,032	$40,320
1888	600	9,000	1907	6,405	57,720
1889	600	9,000	1908	10,582	80,822
1890	600	9,000	1909	7,942	62,588
1891	1,500	15,000	1910	16,570	113,887
1892	1,500	15,000	1911	8,858	67,430
1893	1,093	10,930	1912	10,512	105,120
1894	1,440	10,240	1913	9,632	77,056
1895	2,200	17,000	1914	11,438	114,380
1896	1,500	11,000	1915	30,721	283,461
1897	1,143	13,671	1916	154,052	1,311,893
1898	1,263	19,075	1917	209,648	1,976,227
1899	1,280	18,480	1918	83,974	803,492
1900	2,252	19,333	1919	44,696	452,094
1901	4,726	43,057	1920	83,695	1,033,491
1902	2,830	20,655	1921	47,837	511,102
1903	1,361	20,515	1922	55,637	594,665
1904	2,850	9,298	1923	73,963	946,643
1905	3,933	16,221			
			Totals	903,465	$8,927,866

MAGNESIUM SALTS.

The production of magnesium chloride and sulphate in California during 1923 totaled 3662 tons, valued at $116,031, an increase both in quantity and value over the 1922 figures of 3036 tons and $89,788. This was nearly all chloride, sold for use in magnesite stucco and cement mixtures (Sorel cement), and was prepared from residual bitterns at salt plants in Alameda, Los Angeles, San Diego, and San Mateo counties. It was in part marketed in the liquid form. With the use of magnesite cement and stucco coming more into vogue in building construction on the Pacific Coast, the demand for magnesium chloride is increasing here; but the domestic article has to meet the competition of the cheaper, imported German chloride.

Total Production of Magnesium Salts in California.

The total production of magnesium salts in California since the beginning of the industry here, is shown in the following tabulation:

[1]See U. S. Geol. Surv.; Mineral Resources of U. S., 1886, pp. 6 and 696.

Year	Tons	Value
1916	851	$6,407
1917	1,064	34,973
1918	1,008	29,955
1919	1,616	82,457
1920	3,150	107,787
1921	4,153	106,140
1922	3,036	89,788
1923	3,662	116,031
Totals	18,540	$573,538

MANGANESE.

Manganese ore shipments in California in 1923 amounted to a total of 690 tons of all grades, valued at $10,620, being a slight increase in both quantity and value over the 1922 yield which totaled 540 tons and $7,650 value. These ores were utilized mainly by the brick, paint, and glass trade, with a small tonnage of high-grade ore going to electric dry-battery manufacture.

Manganese Ore Production in California, by Years.

Production of manganese ore in California began at the Ladd Mine, San Joaquin County, in the Tesla District in 1867. When shipments of this ore to England ceased late in 1874, upwards of 5000 tons had been produced by that property. For some years following that, the output was small. The tabulation herewith shows the California output of manganese ore, annually, since 1887, when the compilation of such figures was begun by the State Mining Bureau:

Year	Tons	Value	Year	Tons	Value
1887	1,000	$9,000	1906	1	$30
1888	1,500	13,500	1907	1	25
1889	53	901	1908	321	5,785
1890	386	3,176	1909	3	75
1891	705	3,830	1910	265	4,235
1892	300	3,000	1911	2	40
1893	270	4,050	1912	22	400
1894	523	5,512	1913		
1895	880	8,200	1914	150	1,500
1896	518	3,415	1915	4,013	49,098
1897	504	4,080	1916	13,404	274,601
1898	440	2,102	1917	15,515	396,659
1899	295	3,165	1918	26,075	979,235
1900	131	1,310	1919	11,569	451,422
1901	425	4,405	1920	2,892	62,323
1902	870	7,140	1921	1,005	12,210
1903	1	25	1922	540	7,650
1904	60	900	1923	690	10,620
1905			Totals	85,329	$2,333,619

Domestic Manganese Resources.

The subcommittee on manganese of the Mining and Metallurgical Society of America has recently made public its findings on the situation in the United States as regards apparent domestic resources of manganese ores. We quote, herewith, a summary[1] of portions of their report and conclusions:

"To determine the adequacy or inadequacy of the domestic resources the committee first considers domestic requirements, putting them under two heads, metallurgical and chemical. About 95 per cent of the total amount consumed is used in making steel and, to a small extent, in foundries and for special alloys. It is used principally in three forms: ferromanganese, spiegeleisen, and manganiferous pig iron. The availability of an ore for making any one of these alloys is governed largely by its ratio of manganese to iron.

"The committee, in its estimate, assumes that an output of 50,000,000 tons of steel will be reached in the United States between 1930 and 1935, requiring an amount of metallic manganese estimated at 13 lb. per ton, or 290,000 long tons. To this it adds 10,000 tons metallic manganese for the foundry business and special alloys.

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"The remaining 5 per cent of total manganese consumed is used in chemical industries, and the ore is therefrom termed 'chemical' ore. Most of it goes into dry batteries. Total pre-war requirements were about 35,000 tons.

"In estimating the adequacy of domestic resources the committee first had to define 'ore.' With changing conditions as to cost and price, the report points out, the measure of ore reserved must also change, there being a constant shifting back and forth across the border line between ore and waste. Before the war, save for a few thousand tons, the United States had no high-grade manganese ores. With artificial war conditions, however, prices soared and standards lowered, so that in 1918 the United States produced 305,000 tons of ferro-grade ore, furnishing 23.6 per cent of the manganese used. In addition to this, 86 per cent of the manganese used in low-grade products came from domestic sources. This proved that under *artificial war conditions* the United States possessed considerable domestic resources of high-grade as well as low-grade ores.

"Since the armistice, there has been a strong tendency to revert to the pre-war situation, though impeded by unsettled conditions, particularly in Europe and the Near East, and more recently by the tariff set up by Congress.

"In brief, says the report, *under natural conditions* the United States has practically no commercial high-grade manganese ores.

"The committee, therefore, has sought to find out how highly artificial conditions need be to shift important quantities of manganese-bearing material across the border line from waste to ore. It has reviewed 1850 manganese deposits and prospects and studied all information as to their history, production, and possibilities. It was first necessary to determine upon a yard-stick for measuring ore.

"The committee became convinced that a price equivalent to at least 50 per cent more than the highest price obtaining during the late war would be needed to make really considerable quantities of ferro-grade ore commercially available.

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"Applying these assumptions to its study of ore deposits the committee arrived at the estimates of ore reserves, by classes of ore and by states, that are given in detail in the report.

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"Study of these figures shows that the reasonably probable ferro-grade reserves, measured by the high price adopted, would last the country two years, or, if reasonable probabilities are included, a little over four years. Geological conditions are sufficiently well known to make it unlikely that other amounts of importance will be found.

"Of chemical ores there would appear to be about eight years' supply, measured by the $50 index price. Much of this could be produced at lower prices.

"Domestic reserves of spiegel and high manganese pig ores are more abundant, indicating thirty-five to forty years' supply.

"The committee concludes that:

"1. Domestic resources of ferro-grade ores are totally inadequate. No conceivably reasonable legislation can remedy this.

"2. Reserves of chemical ores are adequate for tiding over an emergency, but inadequate from the point of view of continuous supply. Legislation might cause domestic needs to be furnished from domestic sources for a limited time, but the resulting depletion would seriously endanger the country in a time of possible future critical need.

"3. The comparative adequacy of the reserves for spiegel and high-manganese-pig ores fairly raises the question whether some measure of protection, designed to foster their adaptation to industry, would be reasonable.

"Discussing this last question, the report talks of a tariff not high enough to bring about any considerable production of domestic ferro-grade ores, but still high enough to increase the price of ferromanganese to a point where there would be a strong inducement to steelmakers to substitute leaner materials, made from the more or less abundant lean domestic ores.

"The conservation of high-grade manganese by substituting high-manganese pig iron for ferro in making additions to the charge is commendable, says the report, but, being already recognized as a possible economy in steel making, the practice will

[1] See Engineering & Mining Journal-Press, Vol. 117, No. 13, p. 545, Mar. 29, 1924.

proceed of its own momentum, and it is doubted if it can be speeded up by a tariff on high-grade materials, which would place a burden on the steel industry.

"Substitution of spiegel for ferro, on the other hand, could no doubt, be increased by a high tariff on ferro and ferro ores, says the report. Possibly as much as a half of the total steel output could be made with spiegel. But the report points out that among steel makers there is strong prejudice against changing practice in this direction, because ferro is easier to use, surer in its results, and for these reasons cheaper.

"A brief description of foreign resources, at the end, serves to show the comparative insignificance of domestic reserves, and demonstrates why the United States has drawn its supplies from these outside sources.

"The subcommittee concludes:

"1. The domestic resources of ferro-grade and chemical ores are so out of balance with the major foreign resources that, under natural conditions of foreign exchange, imports of such ores can be efficiently stopped only at great cost.

"2. Should legislation be passed which should effect a measurable substitution of domestic for foreign ferro ores, the chief result, aside from cost, would be the dangerous depletion of reserves, which as it is are inadequate for domestic needs.

"3. Domestic resources of low-grade reserves, on the other hand, are comparatively adequate. Any effective attempt, however, to force their adaptation to the country's needs beyond the normal development which may be looked for through increase in skill and a vigorous educational campaign would result in a cost so enormous as to be quite disproportionate to the purpose to be served."

The report is signed by C. M. Weld, chairman; J. W. Furness, D. F. Hewett, Robert Linton, John A. Mathews, J. V. W. Reynders, and Bradley Stoughton.

POTASH.

During 1923, a total of 29,597 tons of potash salts of all grades was produced in California, valued at $709,836, compared with 17,776 tons and $584,388 in 1922. This included potassium chloride from saltworks bitterns and from Searles Lake brine, and sulphate from Portland-cement dust. The quality varied from 34% to 60.5% equivalent K_2O content, the salt being produced at plants in San Bernardino, San Mateo, and Santa Cruz counties. Some potassium chloride was also made at one plant in Alameda County, but not sold as it is intended to convert it into other forms. The product sold was utilized for the manufacture of fertilizers.

Total Production of Potash in California.

The annual amounts and value of these potash materials since their beginning in California in 1914, are shown by the following table:

Year	Tons	Value
1914	10	$460
1915	1,076	19,391
1916	17,908	663,605
1917	129,022	4,202,889
1918	49,381	6,808,976
1919	28,118	2,415,963
1920	26,298	1,465,463
1921	14,806	390,210
1922	17,776	584,388
1923	29,597	709,836
Totals	313,992	$17,267,181

PYRITES.

A total production of 148,004 short tons of pyrites, valued at $555,308, was reported shipped in California during 1923, from properties operated in Alameda, Mariposa, and Shasta counties. This was a slight decrease in both tonnage and value from the figures of 151,381 tons and $570,425 in 1922. The material was mostly used in the manufacture of sulphuric acid, but a portion was utilized directly in the

preparation of agricultural fertilizer and insecticide. The sulphuric acid made is mainly used in the manufacture of explosives and of fertilizers.

Pyrites Production in California, by Years.

The total recorded pyrites production in California to date is as follows:

Year	Tons	Value	Year	Tons	Value
1898	6,000	$30,000	1911	54,225	$182,954
1899	5,400	28,620	1912	69,872	203,470
1900	3,642	21,133	1913	79,000	218,537
1901	4,578	18,429	1914	79,267	230,058
1902	17,525	60,306	1915	92,462	293,148
1903	24,311	94,000	1916	120,525	372,969
1904	15,043	62,992	1917	111,325	323,704
1905	15,503	63,958	1918	128,329	425,012
1906	46,689	145,895	1919	147,024	540,300
1907	82,270	251,774	1920	146,001	530,581
1908	107,081	610,335	1921	110,025	473,735
1909	457,867	1,389,802	1922	151,381	570,425
1910	42,621	179,862	1923	148,004	555,308
			Totals	2,265,970	$7,877,357

SOAPSTONE and TALC.

The total output of talc and soapstone in California in 1923 amounted to 17,439 tons valued at $252,661, compared with 13,378 tons valued at $197,186 in 1922. More than two-thirds of the product was high-grade talc from Inyo and San Bernardino counties, which material was utilized mainly in toilet powders, paint, paper, and rubber manufacture, and in part in magnesite flooring and stucco. The 'soapstone' grades were used mainly for roofing and as a filler in roofing paper, and part also in magnesite cement.

A detailed description of the classification and uses of talc and soapstone is given in Bulletin No. 93[1] issued by the State Mining Bureau in 1923, copies of which may be had on application.

Talc Production of California, by Years.

Production has been intermittent in the state since 1893, as shown in the following table:

Year	Tons	Value	Year	Tons	Value
1893	400	$17,750	1909	33	$280
1894			1910	740	7,260
1895	25	375	1911		
1896			1912	1,750	7,350
1897			1913	1,350	6,150
1898			1914	1,000	4,500
1899			1915	1,663	14,750
1900			1916	1,703	9,831
1901	10	119	1917	5,267	45,279
1902	14	288	1918	11,760	85,534
1903	219	10,124	1919	8,764	115,091
1904	228	2,315	1920	11,327	221,362
1905	300	3,000	1921	8,752	130,078
1906			1922	13,378	197,186
1907			1923	17,439	252,661
1908	3	48	Totals	86,125	$1,131,331

[1] Bradley, W. W., California mineral production for 1922: Cal. State Min. Bur., Bull. 93, pp. 132-137, 1923.

LABORATORY.

FRANK SANBORN, Mineral Technologist.

Letters are frequently received at this bureau from prospectors who seek information as to how certain minerals can be identified in the field. It is not always easy to give simple and satisfactory replies to these inquiries, for some minerals, such as the aluminum silicates which are now in demand, are not always readily identified even when a well-equipped laboratory is at hand. Many of the samples received at the bureau's laboratory are merely more or less decomposed or altered rocks having no commercial value.

There are some of the physical properties of minerals that can be easily learned by a prospector, and by learning these properties it is possible that the worth-while minerals can be identified and prospecting made more interesting.

Hardness. With a little practice the hardness of a mineral can be estimated rather closely by the ease with which it can be scratched with a knife blade.

In the scale of hardness generally used a knife blade has a hardness of a little over 5, while ordinary window glass is usually a little harder, having a hardness of about 5.5; therefore a knife blade will not readily scratch glass. Quartz has a hardness of 7, consequently a knife blade will not scratch quartz, but the quartz will readily scratch glass.

Moh's scale of hardness is as follows: Talc (1), Gypsum (2), Calcite (3), Fluorite (4), Apatite (5), Feldspar (6), Quartz (7), Topaz (8), Corundum (9), Diamond (10).

Gypsum with a hardness of 2 can be scratched with the finger nail. A copper coin has a hardness of 3, and a pin point has a hardness of about 3.5. Care must be taken to distinguish between a *mark* left by one mineral on another and a *scratch*.

Cleavage. Many minerals when struck a sharp, quick blow with a hammer, have the property of breaking with smooth surfaces in certain directions which are parallel to actual or possible crystal faces. This property is called cleavage, and it may be exhibited in only one direction as in mica, or in several directions as in calcite.

Common cleavages are: 'cubic' as shown when a cube of galena is fractured, and 'rhombohedral' as when a piece of calcite is cleaved. Mica exhibits a good example of 'basal' cleavage, and feldspars have a cleavage in two directions, at, or nearly at right angles, while quartz has no cleavage.

Specific Gravity. The specific gravity of a substance is the ratio of its weight to the weight of an equal volume of water, the weight of water being taken as 1.0. Thus quartz has a specific gravity of approximately 2.6 which means that it is 2.6 times heavier than the same volume of water. Lead has a specific gravity of 11.37 and is therefore 11.37 as heavy as an equal volume of water. The mineral barite has a specific gravity of 4.5 and can be distinguished from limestone and other common minerals which it resembles by its 'heavy feeling,' calcite having a specific gravity of 2.72.

Streak. The 'streak' of a mineral is merely the color of its powder. A piece of chert or quartz will often answer as a streak-plate. By rubbing a piece of hematite on a piece of quartz a red powder will adhere to the quartz, yellow for limonite, brown for chromite, etc.

Panning. Many minerals of value though disseminated through a rock can be concentrated by panning. The material to be tested in this way should be ground to a uniform size if possible, and panned carefully in a clean pan (a small frying or egg pan, free from grease, makes an excellent gold pan). In panning, care should be taken not to mistake little fragments of the mortar or pestle for a mineral. It is a good policy to use a magnet on the concentrates, if there is any doubt as to whether or not they are of iron. By careful panning a great many minerals can be concentrated and subsequently identified. Panning should not be considered merely as a method for detecting only gold in rock, for when carefully manipulated, a gold pan can bring to light most of the minerals having a higher gravity than quartz.

The State Mining Bureau endeavors to assist prospectors in every way, and will gladly advise in specific cases. During the four-month period covered by this report 1292 samples were received and determined at the laboratory.

LIBRARY.

FOREST L. CAMPBELL, Librarian.

In addition to the numerous standard works, authoritative information on many phases of the mining and mineral industry is constantly being issued in the form of reports and bulletins by various government agencies.

The library of the State Mining Bureau contains some five thousand selected volumes on mines, mining and allied subjects, and it is also a repository for reports and bulletins of the technical departments of federal and state governments and of educational institutions, both domestic and foreign.

It is not the dearth of the latter publications, but rather a lack of knowledge of just what has been published and where the reports may be consulted or obtained, that embarrasses the ordinary person seeking specific information.

To assist in making the public acquainted with this valuable source of current technical information, 'Mining in California' contains under this heading a list of all books and official reports and bulletins received, with names of publishers or issuing departments.

Files of all the leading technical journals will be found in the library, and county and state maps, topographical sheets and geological folios. Current copies of local newspapers published in the mining centers of the State are available for reference.

The library and reading room are open to the public during the usual office hours, when the librarian may be freely called upon for all necessary assistance.

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Bulletin No. 230—Analysis of Samples of Delivered Coal. By N. H. Snyder.
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Levis (California) Quadrangle.
Malaga (California) Quadrangle.
Marshall (Michigan) Quadrangle.
Richwood (West Virginia) Quadrangle.
Shippenburg (Pennsylvania) Quadrangle.
Sultana (California) Quadrangle.
Trout Run (Pennsylvania) Quadrangle.
Tupelo (Mississippi) Quadrangle.
White Sulphur Springs (West Virginia) Quadrangle.
Ketchum Mountain (Texas) Quadrangle.

Current Magazines on File.

For the convenience of persons wishing to consult the technical magazines in the reading room, a list of those on file is appended:

American Petroleum Institute, New York.
Architect and Engineer, San Francisco.
Arizona Mining Journal, Phoenix, Arizona.
Asbestos, Philadelphia, Pennsylvania.
Brick and Clay Record, Chicago.
Cement, Mill and Quarry, Chicago, Illinois.
Chemical Engineering and Mining Review, London, England.
Engineering and Mining Journal-Press, New York.
Financial Insurance News, Los Angeles, California.
Graphite, Jersey City.
Journal of Electricity and Western Industry, San Francisco.
Metallurgical and Chemical Engineering, New York.
Mining and Engineering Record, Vancouver, B. C.
Mining and Oil Bulletin, Los Angeles.
Oil Age, Los Angeles.
Oil and Gas Journal, Tulsa, Oklahoma.
Oil News, Galesburg, Illinois.

Oildom, New York.
Oil, Paint and Drug Reporter, New York.
Oil Trade Journal, New York.
Oil Weekly, Houston, Texas.
Petroleum Age, New York.
Petroleum Record, Los Angeles.
Petroleum World, Los Angeles.
Queensland Government Mining Journal, Brisbane, Australia.
Rock Products, Chicago, Illinois.
Safety News, Industrial Accident Commission, San Francisco.
Salt Lake Mining Review, Salt Lake City, Utah.
Southwest Builder and Contractor, Los Angeles.
Standard Oil Bulletin, San Francisco.
Stone, New York.
The Record, Associated Oil Company, San Francisco.

Newspapers.

The following papers are received and kept on file in the library:

Amador Dispatch, Jackson, Cal.
Arkansas Oil and Mineral News, Hot Springs National Park (Arkansas).
Bakersfield Morning Echo, Bakersfield, Cal.
Blythe Herald, Blythe, Cal.
Bridgeport-Chronicle-Union, Bridgeport, Mono Co., Cal.
Calaveras Prospector, San Andreas, Cal.
California Oil World, Los Angeles, Cal.
Colusa Daily Sun, Colusa, Cal.
Daily Commercial News, San Francisco, Cal.
Daily Midway Driller, Taft, Cal.
Del Norte Triplicate, Crescent City, Cal.
Gateway Gazette, Beaumont, Cal.
Goldfield News, Goldfield, Nevada.
Guerneville Times, Guerneville, Cal.
Healdsburg Enterprise, Healdsburg, Cal.
Humboldt Standard, Eureka, Cal.
Inyo Independent, Independence, Cal.
Inyo Register, Bishop, Cal.
Lake County Bee, Lakeport, Cal.
Mariposa Gazette, Mariposa, Cal.
Mining and Financial Record, Denver, Colo.
Mining Topics, Sacramento, Cal., and Unionville, Nev.
Mountain Democrat, Placerville, Cal.
Mountain Messenger, Downieville, Cal.
Nevada Mining Press, Reno, Nevada.
Oatman Mining Press, Oatman, Arizona.
Oregon Observer, Grants Pass, Oregon.
Oroville Daily Register, Oroville, Cal.
Petroleum Reporter, Taft, Cal.
Placer Herald, Auburn, Cal.
Plumas Independent, Quincy, Cal.
Plumas National Bulletin, Quincy, Cal.
San Diego News, San Diego, Cal.
Shasta Courier, Redding, Cal.
Siskiyou News, Yreka, Cal.
Stockton Record, Stockton, Cal.
Tuolumne Prospector, Tuolumne, Cal.
Ventura Daily Post, Ventura, Cal.
Weekly Trinity Journal, Weaverville, Cal.
Western Sentinel, Etna Mills, Cal.

PRODUCERS AND CONSUMERS.

The producer and consumer of mineral products are mutually dependent upon each other for their prosperity, and one of the most direct aids rendered by the Bureau to the mining industry in the past has been that of bringing producers and consumers into direct touch with each other.

This work has been carried on largely by correspondence, supplemented by personal consultation. Lists of buyers of all the commercial minerals produced in California have been made available to producers upon request, and likewise the owners of undeveloped deposits of various minerals, and producers of them, have been made known to those looking for raw mineral products.

When the publication of MINING IN CALIFORNIA was on a monthly basis, current inquiries from buyers and sellers were summarized and lists of mineral products or deposits 'wanted' or 'for sale' included in each issue.

It is important that inquiries of this nature reach the mining public as soon as possible and in order to avoid the delay incident to the present quarterly publication of MINING IN CALIFORNIA, these lists are now issued monthly in the form of a mimeographed sheet under the title of 'Commercial Mineral Notes.'

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The Bureau registers technical men, or those qualified for supervisory positions, and vacancies of like nature, only, as no attempt will be made to supply common mine and mill labor.

A list of current applications for positions and 'positions open' is carried in each issue. Notices are designated by a key number, and the name and address corresponding to any number will be supplied upon request, without delay or charge of any kind. If desired, recommendations may be filed with an application, but copies only should be sent to the Bureau, to avoid possible loss. Registration cards for the use of both prospective employers and employees may be obtained at any office of the Bureau upon request, and a cordial invitation is extended to the industry to make free use of the facilities afforded.

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**Bulletin No. 7. Mineral Production of California, by Counties for the year 1894, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 8. Mineral Production of California, by Counties for the year 1895, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 9. Mine Drainage, Pumps, etc., by Hans C. Behr. 1896, 210 pp., 206 illustrations	----
**Bulletin No. 10. A bibliography Relating to the Geology, Palæntology and Mineral Resources of California, by Anthony W. Vogdes. 1896, 121 pp.	----
**Bulletin No. 11. Oil and Gas Yielding Formations of Los Angeles, Ventura and Santa Barbara counties, by W. L. Watts. 1897, 94 pp., 6 maps, 31 illustrations	----
**Bulletin No. 12. Mineral Production of California, by Counties for 1896, by Charles G. Yale. Tabulated sheet	----
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**Bulletin No. 14. Mineral Production of California, by Counties for 1898, by Charles G. Yale	----
**Bulletin No. 15. Map of Oil City Fields, Fresno County, by John H. Means. 1899	----
**Bulletin No. 16. The Genesis of Petroleum and Asphaltum in California, by A. S. Cooper. 1899, 39 pp., 29 illustrations	----
**Bulletin No. 17. Mineral Production of California, by Counties for 1899, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 18. Mother Lode Region of California, by W. H. Storms. 1900, 154 pp., 49 illustrations	----
**Bulletin No. 19. Oil and Gas Yielding Formations of California, by W. L. Watts. 1900, 236 pp., 60 illustrations, 8 maps	----
**Bulletin No. 20. Synopsis of General Report of State Mining Bureau, by W. L. Watts. 1901, 21 pp. This bulletin contains a brief statement of the progress of the mineral industry in California for the four years ending December, 1899	----
**Bulletin No. 21. Mineral Production of California by Counties, by Charles G. Yale. 1900. Tabulated sheet	----
**Bulletin No. 22. Mineral Production of California for Fourteen Years, by Charles G. Yale. 1900. Tabulated sheet	----
Bulletin No. 23. The Copper Resources of California, by P. C. DuBois, F. M. Anderson, J. H. Tibbits and G. A. Tweedy. 1902, 282 pp., 69 illustrations, and 9 maps	.50
**Bulletin No. 24. The Saline Deposits of California, by G. E. Bailey. 1902, 216 pp., 99 illustrations, 5 maps	----
**Bulletin No. 25. Mineral Production of California, by Counties, for 1901, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 26. Mineral Production of California for the past Fifteen Years, by Charles G. Yale. 1902. Tabulated sheet	----
**Bulletin No. 27. The Quicksilver Resources of California, by William Forstner. 1903, 273 pp., 144 illustrations, 8 maps	----
**Bulletin No. 28. Mineral Production of California, for 1902, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 29. Mineral Production of California for Sixteen Years, by Charles G. Yale. 1903. Tabulated sheet	----
**Bulletin No. 30. Bibliography Relating to the Geology, Palæntology, and Mineral Resources of California, by A. W. Vogdes. 1903, 290 pp.	----
**Bulletin No. 31. Chemical Analyses of California Petroleum, by H. N. Cooper. 1904. Tabulated sheet	----
**Bulletin No. 32. Production and Use of Petroleum in California, by Paul W. Prutzman. 1904, 230 pp., 116 illustrations, 14 maps	----
**Bulletin No. 33. Mineral Production of California, by Counties, for 1903, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 34. Mineral Production of California for Seventeen Years, by Charles G. Yale. 1904. Tabulated sheet	----

BULLETINS—Continued.

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	Price
**Bulletin No. 35. Mines and Minerals of California, by Charles G. Yale. 1904, 55 pp., 20 county maps. Relief map of California	----
**Bulletin No. 36. Gold Dredging in California, by J. E. Doolittle. 1905, 120 pp., 66 illustrations, 3 maps	----
Bulletin No. 37. Gems, Jewelers' Materials, and Ornamental Stones of California, by George F. Kuntz. 1905, 168 pp., 54 illustrations	$0.25
**Bulletin No. 38. Structural and Industrial Materials of California, by Wm. Forstner, T. C. Hopkins, C. Naramore and L. H. Eddy. 1906, 412 pp., 150 illustrations, 1 map	----
**Bulletin No. 39. Mineral Production of California, by Counties, for 1904, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 40. Mineral Production of California for Eighteen Years, by Charles G. Yale. 1905. Tabulated sheet	----
**Bulletin No. 41. Mines and Minerals of California, for 1904, by Charles G. Yale. 1905, 54 pp., 20 county maps	----
**Bulletin No. 42. Mineral Production of California, by Counties, 1905, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 43. Mineral Production of California for Nineteen Years, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 44. California Mines and Minerals for 1905, by Charles G. Yale. 1907, 31 pp., 20 county maps	----
**Bulletin No. 45. Auriferous Black Sands of California, by J. A. Edman. 1907. 10 pp.	----
Bulletin No. 46. General Index of Publications of the California State Mining Bureau, by Charles G. Yale. 1907, 54 pp.	.30
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**Bulletin No. 48. Mineral Production of California for Twenty Years. 1906, by Charles G. Yale	----
**Bulletin No. 49. Mines and Minerals of California for 1906, by Charles G. Yale. 34 pp.	----
Bulletin No. 50. The Copper Resources of California, 1908, by A. Hausmann, J. Kruttschnitt, Jr., W. E. Thorne and J. A. Edman, 366 pp., 74 illustrations. (Revised edition.)	1.00
**Bulletin No. 51. Mineral Production of California, by Counties, 1907, by D. H. Walker. Tabulated sheet	----
**Bulletin No. 52. Mineral Production of California for Twenty-one Years, 1907, by D. H. Walker. Tabulated sheet	----
**Bulletin No. 53. Mineral Production of California for 1907, with County Maps, by D. H. Walker, 62 pp.	----
**Bulletin No. 54. Mineral Production of California, by Counties, by D. H. Walker, 1908. Tabulated sheet	----
**Bulletin No. 55. Mineral Production of California for Twenty-two Years, by D. H. Walker, 1908. Tabulated sheet	----
**Bulletin No. 56. Mineral Production for 1908, with County Maps and Mining Laws of California, by D. H. Walker. 78 pp.	----
**Bulletin No. 57. Gold Dredging in California, by W. B. Winston and Chas. Janin. 1910, 312 pp., 239 illustrations and 10 maps	----
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**Bulletin No. 61. Mineral Production of California, by Counties for 1910, by D. H. Walker. Tabulated sheet	----
**Bulletin No. 62. Mineral Production of California for Twenty-four Years, by D. H. Walker, 1910. Tabulated sheet	----
**Bulletin No. 63. Petroleum in Southern California, by P. W. Prutzman. 1912, 430 pp., 41 illustrations, 6 maps	----
**Bulletin No. 64. Mineral Production for 1911, by E. S. Boalich. 49 pp.	----
**Bulletin No. 65. Mineral Production for 1912, by E. S. Boalich. 64 pp.	----

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**Bulletin No. 66. Mining Laws of the United States and California. 1914, 89 pp.	----
**Bulletin No. 67. Minerals of California, by Arthur S. Eakle. 1914, 226 pp.	----
**Bulletin No. 68. Mineral Production for 1913, with County Maps and Mining Laws, by E. S. Boalich. 160 pp.	----
**Bulletin No. 69. Petroleum Industry of California, with Folio of Maps (18 by 22), by R. P. McLaughlin and C. A. Waring. 1914, 519 pp., 13 illustrations, 83 figs. [18 plates in accompanying folio.]	----
**Bulletin No. 70. Mineral Production for 1914, with County Maps and Mining Laws. 184 pp.	----
**Bulletin No. 71. Mineral Production for 1915, with County Maps and Mining Laws, by Walter W. Bradley. 193 pp., 4 illustrations	----
Bulletin No. 72. The Geologic Formations of California, by James Perrin Smith. 1916, 47 pp.	$0.25
Reconnaissance Geologic Map (of which, Bulletin 72 is explanatory), in 23 colors. Scale: 1 inch equals 12 miles. Mounted	2.50
**Bulletin No. 73. First Annual Report of the State Oil and Gas Supervisor of California, for the fiscal year 1915–16, by R. P. McLaughlin. 278 pp., 26 illustrations	----
Bulletin No. 74. Mineral Production of California in 1916, with County Maps, by Walter W. Bradley. 179 pp., 12 illustrations	Free
**Bulletin No. 75. United States and California Mining Laws, 1917. 115 pp., paper	----
Bulletin No. 76. Manganese and Chromium in California, by Walter W. Bradley, Emile Huguenin, C. A. Logan, W. B. Tucker and C. A. Waring, 1918. 248 pp., 51 illustrations, 5 maps, paper	.50
Bulletin No. 77. Catalogue of Publications of California State Mining Bureau, 1880–1917, by E. S. Boalich. 44 pp., paper	Free
Bulletin No. 78. Quicksilver Resources of California, with a Section on Metallurgy and Ore-Dressing, by Walter W. Bradley, 1918. 389 pp., 77 photographs and 42 plates (colored and line cuts), cloth	1.50
Bulletin No. 79. Magnesite in California. (Unpublished.)	------
Bulletin No. 80. Tungsten, Molybdenum and Vanadium in California. (In preparation.)	----
Bulletin No. 81. Foothill Copper Belt of California. (In preparation.)	----
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Bulletin No. 89. Petroleum Resources of California, with Special Reference to Unproved Areas, by Lawrence Vander Leck, 1921. 12 figures, 6 photographs, 6 maps in pocket, 186 pp., cloth	1.25
Bulletin No. 90. California Mineral Production for 1920, with County Maps, by Walter W. Bradley, 1921. 218 pp., paper	Free
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Bulletin No. 92. Gold Placers of California, by Chas. S. Haley, cloth	1.50
Bulletin No. 93. California Mineral Production for 1922, by Walter W. Bradley, 1923	Free

PRELIMINARY REPORTS.

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	Price
**Preliminary Report No. 1. Notes on Damage by Water in California Oil Fields, December, 1913. By R. P. McLaughlin. 4 pp.	----
**Preliminary Report No. 2. Notes on Damage by Water in California Oil Fields, March, 1914. By R. P. McLaughlin. 4 pp.	----
**Preliminary Report No. 3. Manganese and Chromium, 1917. By E. S. Boalich. 32 pp.	----
Preliminary Report No. 4. Tungsten, Molybdenum and Vanadium. By E. S. Boalich and W. O. Castello, 1918. 34 pp. Paper	Free
Preliminary Report No. 5. Antimony, Graphite, Nickel, Potash, Strontium and Tin. By E. S. Boalich and W. O. Castello, 1918. 44 pp. Paper	Free
Preliminary Report No. 6. A Review of Mining in California During 1919. Fletcher Hamilton, 1920. 43 pp. Paper	Free
**Preliminary Report No. 7. The Clay Industry in California. By E. S. Boalich, W. O. Castello, E. Huguenin, C. A. Logan, and W. B. Tucker, 1920. 102 pp. 24 illustrations. Paper	----
**Preliminary Report No. 8. A Review of Mining in California During 1921, with Notes on the Outlook for 1922. Fletcher Hamilton, 1922. 68 pp. Paper	----

MISCELLANEOUS PUBLICATIONS.

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**First Annual Catalogue of the State Museum of California, being the collection made by the State Mining Bureau during the year ending April 16, 1881. 350 pp.	----
**Catalogue of books, maps, lithographs, photographs, etc., in the library of the State Mining Bureau at San Francisco, May 15, 1884. 19 pp.	----
**Catalogue of the State Museum of California, Volume II, being the collection made by the State Mining Bureau from April 16, 1881, to May 5, 1884. 220 pp.	----
**Catalogue of the State Museum of California, Volume III, being the collection made by the State Mining Bureau from May 15, 1884, to March 31, 1887. 195 pp.	----
**Catalogue of the State Museum of California, Volume IV, being the collection made by the State Mining Bureau from March 30, 1887, to August 20, 1890. 261 pp.	----
**Catalogue of the Library of the California State Mining Bureau, September 1, 1892. 149 pp.	----
**Catalogue of West North American and Many Foreign Shells with Their Geographical Ranges, by J. G. Cooper. Printed for the State Mining Bureau, April, 1894	----
**Report of the Board of Trustees for the four years ending September, 1900. 15 pp. Paper	----
Bulletin. Reconnaissance of the Colorado Desert Mining District. By Stephen Bowers, 1901. 19 pp. 2 illustrations. Paper	Free
Commercial Mineral Notes. A monthly mimeographed sheet. April, May, June, July, August, September, October, November, December, 1923	Free
January, February, March, April, May, 1924	Free

MAPS.

Registers of Mines With Maps.

Asterisks (**) indicate out of print.

	Price
Register of Mines, with Map, Amador County	$0.25
Register of Mines, with Map, Butte County	.25
**Register of Mines, with Map, Calaveras County	----
**Register of Mines, with Map, El Dorado County	----
**Register of Mines, with Map, Inyo County	----
**Register of Mines, with Map, Kern County	----
**Register of Mines, with Map, Lake County	----
**Register of Mines, with Map, Mariposa County	----
**Register of Mines, with Map, Nevada County	----
**Register of Mines, with Map, Placer County	----
**Register of Mines, with Map, Plumas County	----
**Register of Mines, with Map, San Bernardino County	----
**Register of Mines, with Map, San Diego County	----
Register of Mines, with Map, Santa Barbara County	.25
**Register of Mines, with Map, Shasta County	----
**Register of Mines, with Map, Sierra County	----
**Register of Mines, with Map, Siskiyou County	----
**Register of Mines, with Map, Trinity County	----
**Register of Mines, with Map, Tuolumne County	----
**Register of Mines, with Map, Yuba County	----
Register of Oil Wells, with Map, Los Angeles City	----

OTHER MAPS.

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Map of California, Showing Mineral Deposits (50 x 60 in.)—	
**Mounted	----
**Unmounted	----
Map of Forest Reserves in California—	
Mounted	.50
**Unmounted	----
**Mineral and Relief Map of California	----
**Map of El Dorado County, Showing Boundaries, National Forests	----
**Map of Madera County, Showing Boundaries, National Forests	----
**Map of Placer County, Showing Boundaries, National Forests	----
**Map of Shasta County, Showing Boundaries, National Forests	----
**Map of Sierra County, Showing Boundaries, National Forests	----
**Map of Siskiyou County, Showing Boundaries, National Forests	----
**Map of Tuolumne County, Showing Boundaries, National Forests	----
**Map of Mother Lode Region	----
**Map of Desert Region of Southern California	----
Map of Minaret District, Madera County	.20
Map of Copper Deposits in California	.05
**Map of Calaveras County	----
Map of Plumas County	.25
**Map of Trinity County	----
Map of Tuolumne County	.25
Geological Map of Inyo County. Scale 1 inch equals 4 miles	.60
Map of California accompanying Bulletin No. 89, showing generalized classification of land with regard to oil possibilities. Map only, without Bulletin	.25
Geological Map of California, 1916. Scale 1 inch equals 12 miles. As accurate and up-to-date as available data will permit as regards topography and geography. Shows railroads, highways, post offices and other towns. First geological map that has been available since 1892, and shows geology of entire state as no other map does. Geological details lithographed in 23 colors. Mounted	2.50

OIL FIELD MAPS.

These maps are revised from time to time as development work advances and ownerships change.

	Price
Map No. 1—Sargent, Santa Clara County	$0.50
Map No. 2—Santa Maria, including Cat Canyon and Los Alamos	.75
Map No. 3—Santa Maria, including Casmalia and Lompoc	.75
Map No. 4—Whittier-Fullerton, including Olinda, Brea Canyon, Puente Hills, East Coyote and Richfield	.75
Map No. 5—Whittier-Fullerton, including Whittier, West Coyote, and Montebello	.75
Map No. 6—Salt Lake, Los Angeles County	.75
Map No. 7—Sunset and San Emido and Kern County	.75
Map No. 8—South Midway and Buena Vista Hills, Kern County	.75
Map No. 9—North Midway and McKittrick, Kern County	.75
Map No. 10—Belridge and McKittrick, Kern County	.75
Map No. 11—Lost Hills and North Belridge, Kern County	.75
Map No. 12—Devils Den, Kern County	.75
Map No. 13—Kern River, Kern County	.75
Map No. 14—Coalinga, Fresno County	.75
Map No. 15—Elk Hills, Kern County	.75
Map No. 16—Ventura-Ojai, Ventura County	.75
Map No. 17—Santa Paula-Sespe Oil Fields, Ventura County	.75
Map No. 18—Piru-Simi-Newhall Oil Fields	.75
Map No. 19—Arroyo Grande, San Luis Obispo County	.75
Map No. 20—Long Beach Oil Field	1.00
Map No. 21—Portion of District 4, Showing Boundaries of Oil Fields, Kern and Kings counties	.75
Map No. 22—Portion of District 3, Showing Oil Fields, Santa Barbara County	.75
Map No. 23—Portion of District 2, Showing Boundaries of Oil Fields, Ventura County	.75
Map No. 24—Portion of District 1, Showing Boundaries of Oil Fields, Los Angeles and Orange counties	.75
Map No. 26—Huntington Beach Oil Field	.75
Map No. 27—Santa Fe Springs Oil Field	.75
Map No. 28—Torrance, Los Angeles County	.75

DETERMINATION OF MINERAL SAMPLES.

Samples (limited to three at one time) of any mineral found in the state may be sent to the Bureau for identification, and the same will be classified free of charge. No samples will be determined if received from points outside the state. It must be understood that no assays, or quantitative determinations will be made. Samples should be in lump form if possible, and marked plainly with name of sender on outside of package, etc. No samples will be received unless delivery charges are prepaid. A letter should accompany sample, giving locality where mineral was found and the nature of the information desired.

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THE STATE MINING BUREAU

CORDIALLY INVITES YOU TO VISIT ITS VARIOUS DEPARTMENTS MAINTAINED FOR THE PURPOSE OF FURTHERING THE DEVELOPMENT OF THE

MINERAL RESOURCES OF CALIFORNIA

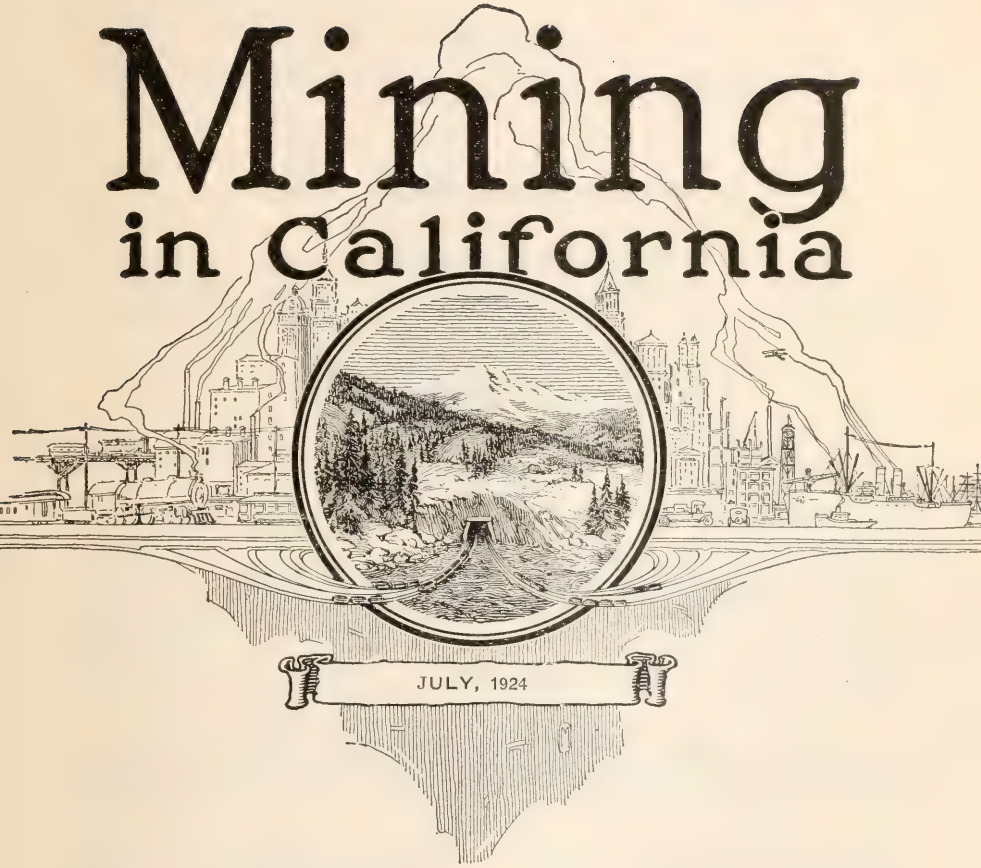
At the service of the public are the scientific reference library and reading room, the general information bureau, the laboratory for the free determination of mineral samples found in the state, and the largest museum of mineral specimens on the Pacific Coast. The time and attention of the State Mineralogist, as well as that of his technical staff, is also at your disposal.

Office hours: 9 a.m. to 5 p.m. daily.
Saturday, 9 a.m. to 12 m.

LLOYD L. ROOT,
State Mineralogist.

Third floor, Ferry Building, San Francisco, Cal.
Branch Offices: Pacific Finance Building, Los Angeles; Sacramento, Bakersfield, Taft, Coalinga, Santa Maria, and Santa Paula.

Mining in California



JULY, 1924

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CALIFORNIA STATE MINING BUREAU

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CALIFORNIA STATE MINING BUREAU.

EXECUTIVE AND TECHNICAL STAFF

LLOYD L. ROOT
State Mineralogist

WALTER W. BRADLEY
Deputy State Mineralogist

MINING DIVISION

C. A. LOGAN, District Mining Engineer - - - - - - -	Sacramento
C. McK. LAIZURE, District Mining Engineer - - - - - -	San Francisco
W. BURLING TUCKER, District Mining Engineer - - - - -	Los Angeles
CHAS. S. HALEY, Mining Engineer - - - - - - - - -	San Francisco
C. D. HULIN, Geologist - - - - - - - - - - - -	San Francisco
FRANK SANBORN, Mineral Technologist - - - - - - -	San Francisco

DEPARTMENT OF PETROLEUM AND GAS

R. D. BUSH, State Oil and Gas Supervisor - - - - - -	San Francisco

NOTE.—A detailed report of the activities of the Department of Petroleum and Gas is issued monthly by the State Mining Bureau, entitled 'Summary of Operations, California Oil Fields.'

CALIFORNIA STATE MINING BUREAU
FERRY BUILDING, SAN FRANCISCO

LLOYD L. ROOT State Mineralogist

Vol. 20 JULY, 1924 No. 3

CHAPTER OF

REPORT XX OF THE STATE MINERALOGIST

COVERING

MINING IN CALIFORNIA

AND THE

ACTIVITIES OF THE STATE MINING BUREAU

CALIFORNIA STATE PRINTING OFFICE
FRANK J. SMITH, Superintendent
SACRAMENTO, 1924

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CALIFORNIA STATE MINING BUREAU
LLOYD L. ROOT
STATE MINERALOGIST
OUTLINE MAP
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CALIFORNIA
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MEXICO
PACIFIC OCEAN
SISKIYOU
MODOC
HUMBOLDT
TRINITY
SHASTA
LASSEN
TEHAMA
PLUMAS
GLENN
BUTTE
SIERRA
MENDOCINO
LAKE
COLUSA
YUBA
NEVADA
PLACER
YOLO
EL DORADO
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NAPA
AMADOR
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CALAVERAS
MARIN
CONTRA COSTA
SAN JOAQUIN
TUOLUMNE
MONO
SAN FRANCISCO
ALAMEDA
STANISLAUS
MARIPOSA
SANTA CLARA
MERCED
MADERA
INYO
SAN BENITO
FRESNO
MONTEREY
TULARE
KINGS
SAN LUIS OBISPO
KERN
SANTA BARBARA
VENTURA
LOS ANGELES
SAN BERNARDINO
ORANGE
RIVERSIDE
SAN DIEGO
IMPERIAL
- LEGEND -
Mining Division Boundaries.
Mining Division Offices.

PREFACE.

The State Mining Bureau is maintained for the purpose of assisting in all possible ways in the development of California's mineral resources.

As one means of offering tangible service to the mining public, the State Mineralogist for many years has issued an annual or a biennial report reviewing in detail the mines and mineral deposits of the various counties.

The weak point in work of this character has been that the results of field investigations were so long in preparation that they had lost much of their usefulness by the time they finally appeared in print.

As a progressive step in advancing the interests of the mineral industry, publication of the Annual Report of the State Mineralogist in the form of monthly chapters was begun in January, 1922, and continued until March, 1923.

Owing to a lack of funds for printing, quarterly publication was begun in September, 1923.

For the same reason, beginning with the January, 1924, issue, it has been necessary to charge a subscription price of $1 per calendar year, payable in advance; single copies, 25 cents apiece. 'Mining in California' will continue to be sent without charge to our exchange list, including schools and public libraries, as are also other publications of the State Mining Bureau.

Pages are numbered consecutively throughout the year and an index to the complete reports is included annually in the closing number.

Such a publication admits of several improvements over the old method of procedure. Each issue contains a report of the current development and mining activities of the state, prepared by the district mining engineers. Special articles dealing with various phases of mining and allied subjects by members of the staff and other contributors are included. Mineral production reports formerly issued only as an annual statistical bulletin are published herein as soon as returns from producers are compiled. The executive activities, and those of the laboratory, museum, library, employment service and other features with which the public has had too little acquaintance also are reported.

While current activities of all descriptions will be covered in these chapters, the Bureau will not discontinue its practice of issuing from time to time technical reports on special subjects. A list of such reports now available is appended hereto, and the names of new bulletins will be added in the future as they are completed.

The chapters will be subject to revision, correction and improvement. Constructive suggestions from the mining public will be gladly received, and are invited.

The one aim of the Mining Bureau is to increase its usefulness and to stimulate the intelligent development of the wonderful, latent resources of the State of California.

DISTRICT REPORTS OF MINING ENGINEERS.

In 1919–1920 the Mining Department was organized into four main geographical divisions, with the field work delegated to a mining engineer in each district working out from field offices that were established in Redding, Auburn, San Francisco and Los Angeles, respectively.

This move brought the Bureau into closer personal contact with operators, and it has many advantages over former methods of conducting field work.

To continue this system most effectively with the limited funds available for the present biennium, the Redding and Auburn field offices were consolidated and moved to Sacramento on June 1, 1923.

The boundaries of each district were adjusted and the counties now included in each of the three divisions, and the locations of the branch offices, are shown on the accompanying outline map of the state. (Frontispiece.)

Reports of mining activities and development in each division, prepared by the district engineer, will continue to appear under the proper field division heading.

Although the petroleum industry is but little affiliated with other branches of mining, oil and gas are among the most valuable mineral products of California, and a report by the State Oil and Gas Supervisor on the current development and general conditions in the state's oil fields is included under this heading.

SACRAMENTO FIELD DIVISION.

C. A. Logan, Mining Engineer.

The increased amount of work at the Sacramento office, due to its central location and the enlarged district, and incidental to the livelier interest in mining, has raised the question as to whether or not the best service could be given the public, under present circumstances, by devoting time to work in the field or in the office, and less time has been available for field work than in the past. There have been few important changes to record in the general mining situation since the last report.

Amador County.

Sinking is going on at several of the deep mines on the Mother Lode in this county. Extended prospecting of a new orebody in the present bottom of the Plymouth Mine, through a winze and under difficult conditions, gave such gratifying results that the directors of the company decided to sink the shaft about 1000 feet or to the 4300 ft. level, inclined depth. The lowest level of the Argonaut Mine is at 4800 feet on the incline, where an orebody is being worked south of the shaft, and sinking is going on. The Kennedy is developing its orebody on the bottom level, which is a few feet deeper than the bottom of the Argonaut. The Moore Mine is sinking from the 800 level to 1000 level.

A new prospecting venture is under way on some claims in Drytown district known as the Consolidated Virginia group. These claims had previously been prospected at various shallow depths of a few hundred

feet by shafts which the present company plans to unwater. B. I. Hoxie is in charge.

A coal property in the lignite belt near Buena Vista has lately been under development by Morris and Darling Brothers.

Calaveras County.

COBALT.

Work was resumed upon the cobalt prospect near Sheep Ranch, since the publication of our January report, in which the prospect is mentioned. Boulders of smaltite ore have been encountered in sinking.

GOLD.

Finnegan Mine on Carson Hill has resumed work since the last report and the 10-stamp mill has been steadily operated lately.

A new compressor of greater capacity than the last has been installed at the *Jolly Tar* prospect near Altaville, but the unwatering of the workings had not been completed late in June.

Washington (Oslin) *Mine*, last operated by Bullion Hill Mining Co., is being reopened by a new company who plan to sink below the present adit level from which last operations were carried on.

Victor Land and Mineral Company temporarily suspended operation of their gravel mine near Altaville late in June.

On the *Bishop Estate*, between Vallecito and Angels Camp, A. H. McKenzie and associates are preparing to sink a shaft to explore the Central Hill channel which they have been drilling during the past year.

Work has been continuing at the *Slab Ranch Mine* on the Central Hill channel between the above mentioned properties, but the channel had not yet been bottomed late in June.

El Dorado County.

Victoria Lode Mine is a prospect in the Rescue district near the old Boulder Mine. A shaft has lately been sunk 30 feet and a drift run 50 feet. The owners report that 20 tons of ore recently crushed in the 2-stamp mill yielded $8 a ton in free gold and that the vein is of good width. Grimshaw, Ferris and Cornelius, owners.

Vandalia Mining Co. N. C. Busby, president. Fred McCall, secretary-treasurer. Office, Sutter Hotel, Sacramento. The Vandalia was an early producer and was described by W. H. Storms in our Bulletin 18. It is about four miles south of Shingle Springs near the Oro Fino Mine and the ore deposit is distinguished from the ordinary vein deposits, being described as a "highly siliceous felsite impregnated with iron sulphide." The present company have been developing and testing the ore and preparing for operation. They claim to have considerable ore developed.

Hines Gilbert Gold Mines Co. Office in Sacramento. The property is in American River Canyon near Spanish Dry Diggings. Work has been financed for a number of years by local sales of stock. There is an adit about 450 feet long and other shorter workings and a depth

of 110 feet has been reached. Some small lots of very good ore have been milled during the past year, returns as high as $40 a ton having been reported. The property is on the course of the Mother Lode and only one of the veins has been developed by the recent work. It was described in the 1920 report.

Nevada County.

It has just been reported that Empire Mines and Investment Company will take over and operate the *Sultana Mine,* adjoining the Empire. The positions of the workings of the two mines are such that this can be done advantageously from the Empire.

Golden Center Mine has been completely unwatered and is being explored for new orebodies.

Idaho-Maryland Mines Company continues work and has been making surface improvements, including a new hoist and strengthening of the headframe.

The report of *North Star Mines Company* for the year 1923 shows that the production fell from the usual figure of about a million dollars to $741,336.67 and that there was a loss resulting from the year's operations. A large sum was spent searching for new orebodies.

Depressed financial conditions have been partly responsible for retarding development of some of the smaller properties in the Grass Valley district and a few of the operators have announced that they are giving up their options on account of the difficulty of raising money.

Placer County.

A test run of between 45 and 50 tons of ore was made early in June from the *American Bar Mine* near Michigan Bluff. The company reported this test showed an average of over $32 a ton, with a loss of $1.45 a ton in the tailing, and with concentrate worth only $26.25 a ton. The test was made in the company's old 10-stamp mill on the property and seems to show that the ore is amenable to ordinary stamp-milling and concentration methods. The ore carries coarse gold. A previously reported average of assays of the exposed ore was about $20 a ton. The property has been described in our June, 1922, report and in the April, 1924, issue.

Big Oak Mine near the Rising Sun Mine, just west of Colfax, is reported in course of being reopened. The *Providence* claims in the Iowa Hill district have lately been taken under lease and option.

Siskiyou County.

A trip to the southern part of the county late in May permitted the gathering of information regarding a few properties not heretofore mentioned in Bureau reports. These are all in the Callahan and Scott Mountain district at the head of the South Fork of Scott River. This section of Scott River and the larger tributaries have some interesting gravel deposits but practically no gravel mining is being attempted at this time. The district was once the scene of dredging operations, and it is more than likely that dredging may be resumed at some

future time, if means can be found to overcome the difficulty of handling the large boulders. Another setback to mining in the district has been the hostile attitude of the largest landowner toward other operators who have tried to put properties in operation.

Ballingal Placer. R. F. Ballingal, Callahan. This mine is at the junction of Jackson Creek with the South Fork of Scott River, six miles south of Callahan, four and one-half miles of the distance being over a good road and the balance trail. Elevation is 4000 feet or more. The gravel lies between the two streams and may have been deposited by either of them when at a higher level. The bank is of moderate depth without overburden and there is a fairly good dump. There are some large boulders, characteristic of this section of the river, where the size of the wash is out of all proportion to the present size of the streams. A derrick would be required to handle these boulders. The gravel is free wash and has been ground sluiced in a small way by the owner, who has realized a small yearly return in coarse gold but has been able to handle only a very little gravel. Water is available under good head for hydraulicking and there are several acres that could be worked in the one piece, with other similar areas on the claim.

Chapman Prospect (quartz). This is on Scott Mountain seven miles from Callahan and one-half mile from the Callahan-Carrville road. In 1922 a 5-stamp mill was built at the foot of the mountain four miles or more from the prospect and ore was hauled down the mountain at great expense. About 40 tons milled are reported to have yielded $856. This came from a narrow seam in a shaft 80 feet deep with about 20 feet of drift, where the pay was reported lost. Previous work in an adit had produced about an equal amount. Idle.

Fippen & Hayden (Boulder Creek) *Placer.* This comprises 60 acres on and near the contact of serpentine and granite. A decomposed dike along the contact carries seams and veins of quartz. Some rough gold, occasionally coarse, has been recovered from hydraulic mining operations in two pits opened on the dike, the total area worked being perhaps two acres. The total production has been small.

The property is equipped with 150 feet of 8-inch and 11-inch pipe and one giant and has two ditches, one of which is about two miles long and is in repair. Water is bought from the McKeen Mine at $1 a year. There is a good head of water at the lower pit and the flow was probably 600 inches or more at the end of May this year. The claims are three miles from Callahan on Boulder Creek. M. E. Gardner, Callahan, is the lessee.

Six-Mile Creek Placer. A. E. Westover, 480 Pine street, San Francisco. This comprises 40 acres and lies at the junction of Six-Mile Creek and East Fork of Salmon River, eighteen miles from Callahan on the Callahan-Cecilville trail. It adjoins the old Root & Salsberg placer. As yet it has been only slightly prospected, having been found only last year. It is reported to be high ground, about 300 feet above the East Fork and believed to run parallel to it for about 1500 feet, though this is not certain on account of obscuring slides from the adjacent hill. Where exposed it is stated to be 200 feet wide and 14

feet deep. About two miles of ditch would be needed to supply water for hydraulicking. There is a cabin, blacksmith shop, three giants, 800 feet of 11-inch and 15-inch pipe and one-fourth mile of 2 ft. by 3 ft. flume belonging to the same owner on the adjoining property and available for use on this ground, and the water of Six-Mile Creek is available for piping under good head. Westover states a test of 200 cubic yards was encouraging.

Sugar Hill Mine. This property is about five and one-half miles southwest from Callahan on the same dike mentioned under the Fippen & Hayden placer. It also has been worked in the past as an hydraulic mine. During the present season Wolfskill & Lidstone have taken a lease and option and have begun prospecting the quartz possibilities of the ground. A quartz vein four feet thick is found in the dike and drifting to explore this vein was being started late in May.

LEAD.

On the Fippen & Hayden placer, described above, an adit of unknown length was run many years ago to prospect for lead. A small amount of good galena ore had been brought out of this adit and dumped. The present lessee, M. E. Gardner, sluiced off the soil overburden and exposed the edge of the vein in place above the old adit. The exposed section is about 30 feet long and the width of vein is from a few inches to one foot. It consists of barite carrying lumps and stringers of galena. Assays of the ore indicate a high lead content, sufficient to make the best samples a good shipping ore, and with a fair content of silver. The location of the vein so close to the igneous intrusive and the contact is a favorable factor. Ore could be concentrated by jigging and would have to be hauled to the railroad at Gazelle, about twenty-seven miles by road.

Other prospects of lead ore have been reported in the region eight to ten miles east of Callahan near the Gazelle road, but so far as could be learned, nothing but float has been found there yet.

REPORTED TIN PROSPECT.

During the past two years some publicity has been given an alleged discovery of tin ore near Kangaroo Lake in this county. This is a small mountain lake penned up behind an ancient moraine and covering an area of about 20 acres at an elevation of 6000 feet or more, sixteen and one-half miles by road and trail east of Callahan. The lake and immediate vicinity were visited late in May in order to learn something about this reported prospect if possible. So far as could be found by examination and inquiry, no work was being done there and none of the parties supposed to have located the claims were to be found.

The most interesting geologic feature of the region is the high cliff of coarsely crystalline rock rising on the southeast side of the lake. This rock, according to report from our laboratory, is composed almost entirely of soda-lime feldspar and hornblende with very little quartz. The crystal aggregates of hornblende and feldspar are in some cases several inches in the longest dimension, and the rock would probably be classed as a diorite pegmatite. Two places were found where a very little prospecting had been done in this formation

but samples taken at these places and tested in our laboratory failed to show any tin.

OTHER MINES.

Lack of time prevented extending the trip to other parts of the county which it is hoped can be reached in time for the next quarterly report. Mention should be made, however, of the difficulties of the placer miners this season on account of lack of water. Interesting developments are going on at the *Big Buzzard Quartz Prospect* near Happy Camp under the direction of H. C. Cutting. Machinery for a mill, which will use the Vandercook mercuric cyanide process, is on the ground, but the water shortage is given as a reason for delay in setting up the plant. At the *Independence Mine*, on the east side of Klamath River ten miles downstream from Happy Camp, very satisfactory production has been made this season from a short drift and a series of shallow winzes sunk below it. The production has been high grade gold ore.

Trinity County.

Parts of the county were visited in May and it was found that gold mining had been very quiet the past year, with very little work being done at the time of visit.

Hydraulic mining suffered from the extreme shortage of water. B. R. Brown, lessee of *La Grange Mine*, had only sufficient water for 60 hours run. The splendid water supply system maintained while the mine was fully active has been allowed to fall partly into decay. *Lorenz Bros.* closed down early in May. *Red Hill Placer*, near Junction City, had only eight days water supply for piping during the past season. *Nugget Bar Placer*, above Minersville, closed down in March after a short effort to operate.

The gold dredgers described in our December, 1922, report have been producing most of the gold mined in the county lately. These dredgers are on Trinity River from near Lewiston to above Trinity Center. The site of the town of Trinity Center has in part been given over to one of these dredging companies which has been getting satisfactory results.

Assessment work and prospecting for quartz ore is quite active, but so far as could be learned no quartz mills were being operated in the county during May. On the East Fork of North Fork of Trinity River eight to twenty miles from Junction City, a number of quartz prospectors are working. Work was started in May at the *Bully Choop Mine* in the southern part of the county sixteen miles southeast of Douglas City. At the *Trinity Bonanza King Mine*, United Trinity Mines, a corporation, had a crew of about twelve men employed in May retimbering some of the old workings and prospecting. A few men were also employed at the *Strode Mine* east of Carrville.

Tuolumne County.

Clio Vindicator Mines Co. completed their new 10-stamp mill and cyanide plant at the end of June and have begun making test runs. The ore is crushed in cyanide solution and the new Vandercook mercuric cyanide process is used. Runs so far made are reported to have given a satisfactory recovery.

Eagle Shawmut Mining Co. is sinking a winze, in which they plan to go 600 feet deeper than their present bottom level, which is at 2780 feet. The mill is being operated at part capacity and over 100 men are employed.

Further transactions have been announced concerning the *Experimental Gulch Mine* above Columbia. The United Mines Co. of California have undertaken to operate the property and announcement has been made that new territory will be explored. Work is planned on the *Gandolfo* and *Rocca* claims near Stent and on the *Josephine Prospect* four miles from that place. A recent strike has been reported from the *McCormick Mine* on the Tuolumne River above Jacksonville. There is also activity at a number of properties on the East Belt, with a few men employed in each case.

Springfield Tunnel and Development Company is persistently continuing the exploration of their large drift mining holdings near Sonora. The latest announcements are of an optimistic character and indicate the hope of the operators that they are about to enter a profitable section of the buried channels. The underground geology of the property was found to be unexpectedly complicated on account of the character of the bedrock.

Pacific Lime and Plaster Co. of Sonora has lately been adding to its plant in order to manufacture a greater variety of limestone products including hydrated products.

SAN FRANCISCO FIELD DIVISION.

C. McK. Laizure, Mining Engineer.

Alameda County.

Industrial Chemical Corporation. E. M. Vail, president; H. H. Vail, secretary; Carl W. Beckman, treasurer; home office, 3221 San Fernando Bldg., Los Angeles; local address, Newark, California. The company formerly operated a plant at San Diego, producing magnesium chloride, epsom salts, magnesite, and potash under the name California Chemical Company, Inc. The San Diego plant was sold in 1923 to the National Kellastone Co. of Chicago, Illinois, and Porterville, California, and since then activities have been transferred to Newark, Alameda County. A new plant has been erected on property leased from the Arden Salt Works at Newark, and bittern waters from the Arden works and other salt companies are purchased under contract.

This 'mother liquor' brine, or bittern, remaining after the sodium chloride (common salt) has crystallized out through solar evaporation and been removed mechanically at the salt works, is the raw material treated in the Industrial Chemical Corporation plant. By a carefully regulated process of evaporation in vacuum, using artificial heat, various other salts originally contained in the sea water are recovered in crystal form. Salts being produced on a commercial scale at the present time are magnesium chloride, epsom salts (hydrous magnesium sulphate), magnesium bromide, and potassium chloride.

Industrial Chemical Corporation's Plant, Newark, California.

Mission Lime Marl Deposit. This deposit is situated about one-quarter mile east of Mission San Jose. The property is under lease to T. D. Witherly, Box 52, Mission San Jose. The limestone, which is somewhat soft and decomposed, outcrops at the base of a small hill easily reached by good road. Mining is by open cut. The material is suitable for agricultural use, but the production to date has been small. Equipment consists of grizzly, small jaw crusher, Grundler mill, bucket elevator and

bin. An analysis of the material, as reported by the Pacific Chemical Laboratories, was as follows :

Nitrogen	0.46%
Limestone	83.10%
Lime phosphate	0.59%
Potash (soluble)	0.46%
Undetermined	15.39%

Similar material is said to occur at other points on the Witherly property, but no development has been done at these localities.

LOS ANGELES FIELD DIVISION.

W. B. TUCKER, Mining Engineer.

Inyo County.

Cerro Gordo Mine (lead, silver, zinc) is situated in the Inyo range of mountains, near the summit of Cerro Gordo Peak, eight miles east of Keeler. Elevation 8500 feet. Owner, *Cerro Gordo Mines Company,* San Jose, Cal. In February, 1923, the mine was taken over under lease by the Natural Soda Products Company, Keeler, California. W. W. Waterson, president; J. S. Henderson, secretary; C. A. Stockton, manager.

GEOLOGY:

According to Knopf,[1]

"The prevailing rock at the mine is a dense, fine-grained, white marble; with this are associated some interstratified slate, and a number of dikes of diorite and of monzonite porphyry which lie approximately parallel to the stratification of the inclosing beds.

"The rocks in the immediate vicinity of the mine are part of a formation of the Carboniferous Age which is extensively developed in the surrounding area. This formation consists principally of limestone, with some interstratified shale or slate and quartzite. A belt of shale, probably 300 feet thick, lies northwest of the mine, and is underlain by fine-grained, white quartzite, 100 feet thick. The strike is N. 30° W., and dip 45° W. * * *

"The intercalated beds of shale and quartzite prove useful horizon markers, and show faulting of complicated character has taken place, centering particularly at the Cerro Gordo Mine. * * *

"East of the mine the limestones as a rule dip eastward, the dip averaging 45° E. on Cerro Gordo Peak, and flattening farther east. * * * The examination of the geologic structure around Cerro Gordo therefore shows that the rocks have been subjected to severe faulting. Some of this faulting took place prior to the formation of the ore bodies, and some after the ore bodies had been formed, but the post-mineral faults are probably of much smaller magnitude than those of pre-mineral origin. Many faults are exposed in the underground workings of the Cerro Gordo Mine. * * *

"Northwest of Cerro Gordo monzonite porphyry forms a small mass intrusive in the surrounding shale. * * * In the mine occur dikes which appear to have been originally similar to the monzonite porphyry northwest of Cerro Gordo. These dikes are altered by shearing, primary mineralization, by oxidation, and by the downward percolation of sulphate solutions. * * *

"One of the most prominent dikes in the mine is that cut in the Union tunnel, in the footwall crosscut of the Santa Maria pit, where it is 50 feet wide, and in the Zero level. The dike apparently conforms in the main with the strike and dip of the bedding of the inclosing rocks. In the Union tunnel, however, the contacts are much shattered. The west contact strikes N. 15° W., and the east contact N. 35° W., both being nearly vertical. The dike is overlain by a shale belt 105 feet wide and is underlain by massive white marble. In the Zero level, which is several hundred feet south of the Union tunnel, the dike lies within the shale belt, and therefore probably cuts across the trend of the formation at a narrow angle. * * *

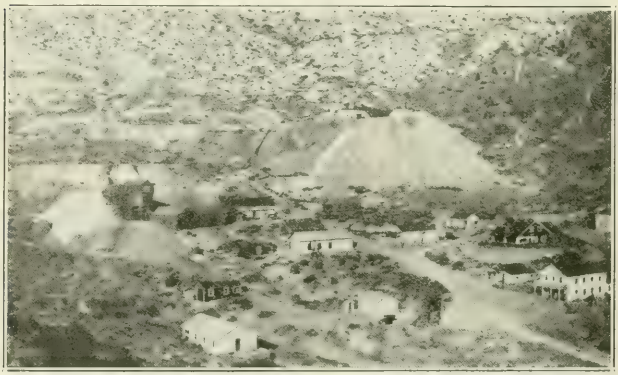
"Other dikes differing considerably from the monzonite porphyry were noted in the underground workings. They range in different dikes from 4 to 25 feet in thickness; on 900-feet level one of these dikes was found to be an intrusive into the monzonite porphyry. They are gray, fine-grained, granular diorites."

[1] Knopf, Adolph, Mineral resources of the Inyo and White Mountains, California: U. S. Geol. Surv., Bull. 540, pp. 100–103, 1912.

DEVELOPMENT:

The present company's development work is confined to the lead orebodies, on the 400′, 700′, 900′, and 1000′ levels.

The lead orebodies of Cerro Gordo consist of lenticular masses distributed through a zone 2000 feet long and several hundred feet wide. The predominant rock of the ore-bearing zone is a white marble. Slate and igneous rock—the dikes of diorite and porphyry—occur also within the ore-bearing zone, but the orebodies that have been worked are inclosed principally in the marble. The rocks of the ore-bearing zone strike in a north to northwesterly direction, and dip on the average 70° S.W.; the orebodies conforming to the trend of the inclosing rocks. The lead orebodies formerly worked were from 3 to 20 feet wide, and about 70 feet in length. The ore consists largely of galena, cerrusite, anglesite; also some sphalerite, tetrahedrite and pyrite. The San Felipe vein cuts diagonally across the silver-lead ore-bearing zone, trending



Belshaw Shaft, Cerro Gordo Mines, Inyo County.

N. 35° W., and dipping 70° to 80° S.W. It traverses both marble and porphyry, and is about 12 inches to 2 feet in thickness. The main ore mineral noted is tetrahedrite, with its oxidation products, azurite and malachite inclosed in a gangue of barite and quartz.

The ore now mined is worked through the Belshaw shaft, 900 feet deep, with levels at 200′, 400′, 500′, 700′, and 900′. A winze is being sunk from the 900-foot level, 160 feet north of the Belshaw shaft. At a depth of 100 feet (1000-foot level), a crosscut has been driven west 30 feet, cutting a vein of quartz 2 to 6 feet wide, which strikes N. 35° W. and dips 70° to 80° S.W. The quartz is mineralized with tetrahedrite, galena, azurite, and malachite.

The ore mined is said to assay 25 ozs. silver, 1½% to 2½% lead, and 2½% copper. This vein lies about 250 feet south of the San Felipe vein, and has a course parallel to it. The vein has been drifted for a distance of 100 feet. The present company plans to sink the winze to a depth of 250 feet below the 900-foot level. On the 1000-foot level a

drift has been driven southeast several hundred feet, developing a lens of lead carbonate ore. The 400-foot level, in the vicinity of the China stope, has been subleased to Cooper Shapley and B. S. Hook of Bishop, who have also a lease on the Cerro Gordo mill. The fills of the old stopes are being drawn and the fines are to be treated in the mill at Keeler. The ore is stated to assay 13% lead, 7 ozs. silver, 1½% copper, and 50 cents in gold. From concentration test it is stated a product assaying 45% lead and 60 ozs. silver can be produced with a recovery of 60% of the lead and silver. The company is shipping 150 tons of ore per month. The siliceous ore from the 1000-foot level is shipped to the Mammoth Copper Company's smelter at Kennett, Shasta County. Freight on this ore from Keeler to Kennett costs $3.90 per ton. The lead ore is shipped to the Midvale Smelter, Utah.

Limestone is being mined through the Union tunnel, and 80 tons per day are transported over a tramway to bunkers at Keeler, from which it is loaded in railroad cars and hauled to the plant of the Natural Soda Products Company.

Mine equipment: Single drum hoist driven by 100-h.p. motor; 1 Ingersoll-Rand compressor (16″ x 12″) (9″ x 12″) driven by 75-h.p. motor; 1 Ingersoll-Rand compressor (21″ x 16″) (12″ x 16″) driven by 100-h.p. motor. A Leschen aerial tramway 29,560 feet long carries ore and limestone to bunkers on the railroad at Keeler. Capacity of tramway is 16 tons per hour. Electric power is furnished by the Southern Sierras Power Company.

Mill equipment: 9″ x 15″ Blake crusher, No. 54 Marcy mill in closed circuit with Dorr duplex classifier, elevators, 1 Colorado impact screen, 1 Burchart concentrator, and 3 Wilfley concentrators. Mill driven by 50-h.p. motor. Forty men employed.

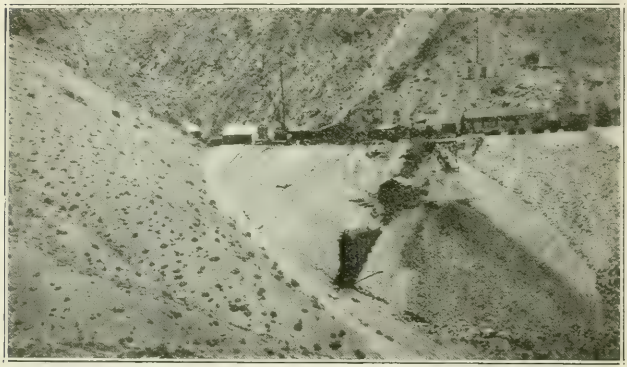
Bibl: U. S. Geol. Survey Bull. No. 540, pp. 97–109; Professional Paper 110, pp. 106–116; State Mineralogist Report XV. pp. 90–92.

Estelle Group of Mines, Cerro Gordo district, is five miles east of Keeler on the western slope of Cerro Gordo Mountain. Holdings comprise 11 claims. Elevation 6100 feet. Owner, *Estelle Mining Company;* Adolph Ramish, president; Roy C. Troeger, secretary; Thomas L. Chapman, general manager. Offices, Keeler, Cal.

Since the publication of Report XVII of the State Mineralogist (1920), the energies of the company have been devoted to driving the Dellaphene tunnel, which has been driven N. 60° E. 9000 feet, intersecting the vein on the Morning Star claim at a depth of 1700 feet, and also said to have cut the San Felipe vein developed in the Cerro Gordo Mine, at depth of 2400 feet below the Cerro Gordo Mine. The tunnel intersects carboniferous rocks consisting mainly of limestone. At 5929 feet from the portal, a drift has been driven southeast 900 feet along a fault fracture, which is evidently a post-mineral fault as no ore was developed. Near the face of this drift a crosscut is being driven southwest to cut the Morning Star vein. At 6772 feet from the portal a drift has been driven southeast 800 feet on a fault fissure; a small lens of lead carbonate and galena ore being developed. Average width of ore 18 inches. At 7676 feet from the portal it cut the San Felipe vein. Drifts have been driven on this vein 300 feet northwest,

and 300 feet to the southeast. The vein strikes N. 35° W. and dips 70° to 80° S.W. It traverses the limestone and ranges from 18″ to 4 feet wide. The gangue is quartz mineralized with galena and pyrite, occasionally with tetrahedrite.

In a drift to the north from the main crosscut tunnel, which is located 100 feet west of the San Felipe vein, a 3-compartment raise has been put up in the limestone a distance of 200 feet. At 40 feet it cut a small lens of lead carbonate and galena ore and at 160 feet cut another lens of ore 20 feet long and 12 feet wide. Other orebodies have been developed in the limestone east of the San Felipe vein. This indicates that the silver-lead ore-bearing zone has been cut by the San Felipe vein and probably occurs in the limestone about 100 feet east and west of the San Felipe vein. These orebodies consist of lenticular masses of lead carbonate, the ore being inclosed in marbleized limestone. The ore is principally reddish yellow lead carbonate and galena,



Troeger Tunnel, Estelle Group of Mines, Cerro Gordo District, Inyo County.

said to carry 30 ozs. silver, and 30% lead. These orebodies occur on or near the intersections of north-south and east-west fissures on bedding planes of limestone, which dip 25° to 35° east. Ore mined is trammed in twelve 25-cubic-foot ore cars hauled by an electric storage battery locomotive to ore-bins at the mouth of the tunnel, where it is sorted, then hauled by trucks to Keeler. Ore shipments to the smelter at Midvale, Utah, average 250 tons per month.

The *Morning Star Mine*, owned by the company, is under lease to Harry Hildeman of Keeler. The Morning Star workings are situated at an elevation of 8000 feet.

Developments: Consist of crosscut tunnel driven N. 40° E. 450 feet where it cut a lead-silver ore-bearing zone in limestone. A winze was sunk on ore to a depth of 225 feet, with levels at 40′, 70′, 120′, and 220′. The ore-bearing fissure strikes N. 30° W., dipping 75° S.W. Galena and carbonate ore is being mined, carrying 30 ozs. silver, 10%

to 12% lead and some gold values. Five men are employed on the Morning Star lease.

Equipment: Ingersoll-Rand compressor (17″ x 14″) (10″ x 14″) driven by 100-h.p. motor, Root's No. 8 pressure blower driven by 25-h.p. motor, fifteen 25-cubic-foot ore cars, aerial tramway 7000 feet in length from the Morning Star Mine to ore bunkers below the Dellaphene tunnel, storage battery locomotive, blacksmith shop, assay office, and buildings for employees. Electric power is supplied by the Southern Sierras Power Company. Twenty men are employed.

Bibl: U. S. Geol. Survey Bull. No. 540, p. 110; State Mineralogist Report XVII, p. 286.

Lucky Jim Mine (lead-silver). Situated in the Darwin district, two miles north of Darwin, and twenty-four miles southeast of Keeler. Owners, *Darwin Silver Company,* Chicago, Illinois. The mine is under lease to A. G. Kirby of Darwin, Cal. The ore mined from the Lucky Jim is being concentrated in a mill on the property. Fifteen men are employed.

Bibl: Mineral Resources West of Rocky Mountains, 1876, p. 25; Report of Director of Mint, Precious Metals in U. S. 1883, p. 163; State Mineralogist Reports VIII, p. 226; X, p. 211; XII, p. 24; XV, pp. 100–101; XVII, pp. 289–290; U. S. Geol. Survey Bull. No. 580, pp. 12, 18.

Santa Rosa Mine (lead-silver) is located in the Lee Mining district, east of Cerro Gordo, and twenty-six miles by road from Keeler. Elevation 7000 feet. Owner, *Independent Lead-Silver Mining Company,* Syndicate Building, Oakland, Cal. Under lease to Scruggs & Yake, Howard & Wilson, and Joe La Cyr of Keeler.

The country rock is limestone intruded by dioritic-porphyry dikes. The ore occurs on the contact of limestone with diorite intrusions, and is composed of galena and lead carbonate, carrying values in silver. Six cars of ore were shipped during the month of April to the Midvale Smelter, Utah. Eight men are employed.

Bibl: State Mineralogist Reports XV, pp. 107–108; XVII, p. 294.

MARBLE.

Inyo Marble Company, D. H. Dunn, president; Robert H. Tune, secretary; offices 1014 Hibernian Building, Los Angeles. The property of the company is located six miles north of Keeler, on the southwestern flank of the Inyo Range of Mountains. Two quarries are under operation. The company is supplying the Inyo Chemical Comany with dolomite. Six men are employed.

Bibl: State Mineralogist Reports X, p. 215; XII, p. 392; XIII, p. 628; XV, p. 111; XVII, p. 295; State Mining Bureau Bull. 38, pp. 99–100.

POTASH AND SODA.

Inyo Chemical Company of Detroit, Michigan, on May 1, 1924, purchased the plant of the *California Alkali Company,* which is situated at Cartago, a station on Owenyo branch of the Southern Pacific Rail-

road. The plant is located on the western shore of Owens Lake. Officers of the present company are H. W. Carr, president; W. H. Lowery, plant superintendent. Pacific coast office, 910 Santa Fe Building, San Francisco.

This plant has been idle since 1922, and the present company plans to remodel and increase its capacity. Due to Owens Lake drying up, a pipe line eight miles in length and pump will have to be installed to pump brine to the vats for solar evaporation. The concentrated brine will be treated in the plant for extraction of potash, borax, sodium carbonate (soda ash), sodium bicarbonate, and crude trona. The plant is expected to treat 600 tons per day of brine, producing 200 tons of dry salt. The company also owns the *Deep Springs Lake deposit*, Inyo County. One hundred men are employed

Bibl: State Mineralogist Report XVII, p. 298.

Inyo Chemical Company's Plant (formerly California Alkali Company), at Cartago, Owens Lake, Inyo County.

Inyo Development Company. This plant is situated one mile northwest of Keeler, on the eastern shore of Owens Lake. The plant was purchased in 1923 by the *Great Western Chemical Company*, Pittsburg, Cal. Idle.

Bibl: State Mineralogist Reports VIII, p. 226; XII, p. 409; XIII, p. 646; XV, pp. 124–125; XVII, p. 299.

Natural Soda Products Company. Plant situated on the east shore of Owens Lake, two miles south of Keeler. Owners, *Natural Soda Products Company:* W. W. Waterson, president; J. S. Henderson, secretary; Paul Waterson, superintendent, Keeler, California.

Since the publication of Report XVII of the State Mineralogist (1920), the plant has been under continuous operation. The company is producing sodium bicarbonate, sodium carbonate (soda ash), and crude trona (a double salt of sodium carbonate and sodium bicarbonate.) Limestone is secured from the Cerro Gordo Mine, for the

generation of carbon dioxide, replacing dolomite formerly secured from the Inyo Marble Company. The burned lime is being sold by the company as a by-product. One hundred men are employed.

TALC.

Inyo Talc Company, P. H. Booth, president; Franklin Booth, secretary; offices, Equitable Bank Building, Los Angeles. Operating *Simons Talc Mine*, and also grinding plant. The mine is located seventeen miles southeast of Keeler, while the grinding plant is at Keeler.

Bibl: State Mineralogist Reports XV, pp. 126–127; XVII, pp. 300–301.

TUNGSTEN.

Pine Creek Tungsten Mine. Situated forty-five miles by road northwest of Laws, on the south slope of Mount Morgan, in the Sierra Nevada Range. Elevation 11,200 feet. The property was recently taken over under lease by the *Tungsten Products Company;* W. W. Waterson, president; E. Cooper Shapley, secretary and manager. At present writing the mine and mill are being put in shape for operation. Thirty men are employed.

Kern County.

GOLD.

King Solomon Consolidated Mines consist of 90 acres in Sec. 35, T. 29 S., R. 40 E., three-fourths of a mile west of Johannesburg, in the Rand district. Owners, *Shipsey Mining Company*, of Los Angeles. Edward Shipsey, president; Thos. D. Nestor, secretary; Ray Drain, superintendent. Elevation 3900 feet.

The vein strikes northwest and southeast. Width 3 feet. Granite footwall and porphyry hanging wall.

Developments consist of shaft 520 feet deep, with levels every 50 feet. Present development work confined to the 300-foot level.

Equipment consists of 25-h.p. electric hoist and 5-stamp mill.

Ore mined from the 300-foot level is reported to assay $50 per ton, and during the month of April 100 tons were treated in the mill. Six men are employed.

LIMESTONE.

Kramer Limestone Deposit is located in T. 8 N., R. 20 W., about six miles west of Chandler, a station on the Ridge Route. Elevation 5300 feet. Owner, *Henry Kramer*, La Crescenta, Cal. Holdings comprise 3 claims; 60 acres.

A massive belt of limestone is exposed on the ridge northeast of Cuddy Canyon, the general strike being northwest and southeast, with a dip to the northeast. The limestone is exposed for a distance of 4500 feet in length and about 300 feet in width. The material is white and crystalline. Analysis reported as 96% $CaCo_3$. Idle.

Riverside County.

EAGLE MOUNTAIN DISTRICT.

Iron Chief Mine (gold). Situated in the northern part of Eagle Mountains, forty miles northeast of Mecca, a station on the Southern

Pacific Railroad. Elevation 2500 feet. Owner, *Southern Pacific Railroad Company.* Holdings comprise six patented claims known as the *Gray Eagle Group.*

The property was originally located by William Stevens and Thomas Dolfflemeyer of San Bernardino. In 1897 the mine was sold to Mr. Charles Lane of San Francisco, who installed a small mill on the property and operated it for several years. The ore milled is said to have had a value of $40 per ton, of which about 50 per cent was recovered. It is stated that the production was $50,000. Mr. Lane did not complete payments on the property and the original owners then installed a 50-ton cyanide plant, operating the mine and mill until about 1902, when sulphide ore was encountered and operations were suspended. The ore milled is said to have had an average value of $10 gold per ton. The production is reported to have been $150,000.

The ore is largely hematite which carries free gold. It occurs as a

Iron Chief Gold Mine. View of Dumps and Cyanide Plant, Eagle Mountains, Riverside County.

replacement along the contact of dolomite and quartz-monzonite. This contact strikes N. 70° W., dipping 50° N.

Developments: Consist of vertical shaft 140 feet deep. About 500 feet west of the shaft a tunnel has been driven east 1000 feet along the contact, cutting the vertical shaft at a depth of 100 feet. On the north slope of the hill, a crosscut tunnel has been driven south 500 feet to the contact. The ore cut in these lower workings was heavy pyrite ore, with some chalcopyrite. Only the oxidized ore above this level was worked. The ore along the contact fissure had a width of from 2 to 10 feet.

Mine equipment: 25-h.p. Foos gas engine.

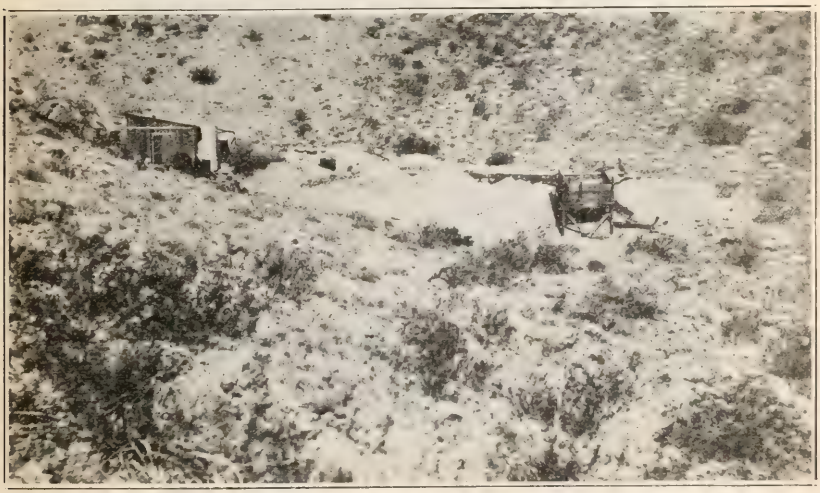
Mill equipment: Two Blake crushers, Gates rolls, eight 4′ x 18′ steel cyanide tanks.

Water was secured from Cottonwood Springs, situated eighteen miles south of the mine. Idle.

Black Eagle Mine (lead, silver, copper, gold). Situated in the northern part of the Eagle Mountains, forty-seven miles northeast of Mecca, a station on the Southern Pacific Railroad. Elevation 2100 feet.

Cottonwood Springs, Eagle Mountains, Riverside County.

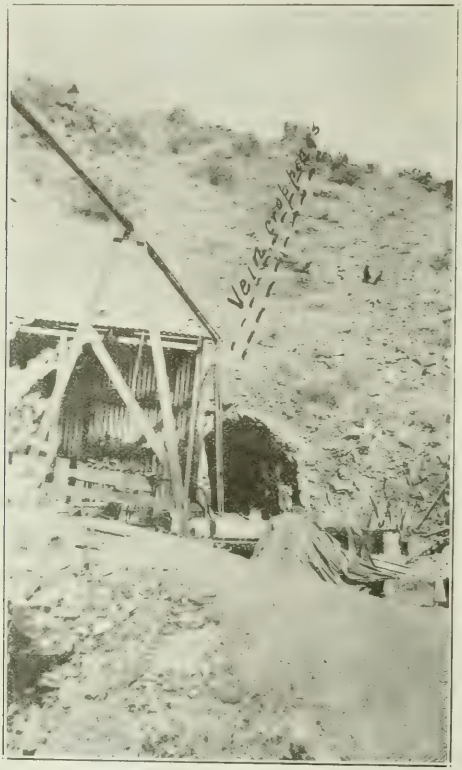
Owner, *Edward Harmon* of San Bernardino, California. Under option to A. W. Scott and George Hayden of Los Angeles. The property comprises three unpatented claims known as Maleta No. 1, No. 2, and No. 3. Area 60 acres.



Compressor Plant and Dumps at Black Eagle Mine, Eagle Mountains, Riverside County.

The Black Eagle vein courses through the center of Maleta No. 1 and No. 2 claims, its strike being N. 70° W., with a dip of 85° to the north. At approximately the middle of Maleta No. 2, the vein inter-

sects a cross vein which has been formed along a fault fracture. The intersection of these two veins show a mineralized fracture at least 15 feet in width. The Black Eagle vein occurs along the contact of quartzite and diorite, forming a contact fissure. Several hundred feet north of the diorite and running parallel to it are strata of dolomitic

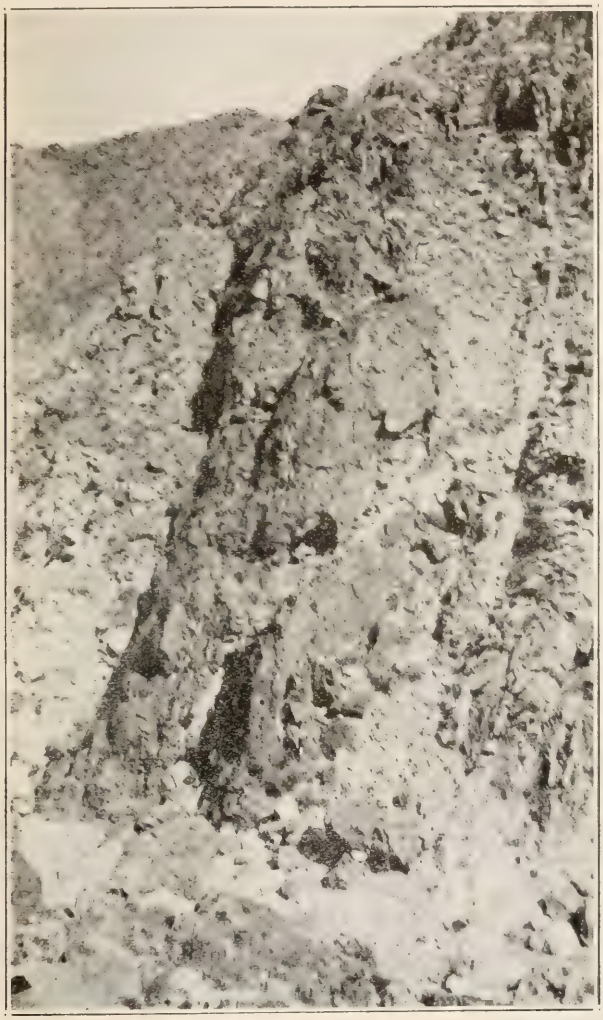


Portal of Tunnel, showing outcrop of vein.
Black Eagle Mine, Eagle Mountains, Riverside County.

limestone, which in many places are replaced by iron oxide, mainly hematite.

Development: The present development is on Maleta No. 1. On this claim an adit tunnel has been driven N. 70° W. for a length of 255 feet. At a distance of 162 feet, a winze has been sunk to a depth of

100 feet. From the bottom of the winze, drifts have been run 40 feet east and 100 feet west. The adit tunnel was driven along the hanging wall of the vein for a distance of 196 feet, where it cut into the vein at what is known as Stope No. 3, and then continued along the vein to the face of the tunnel. The orebody, as exposed by these workings,



Mixed Iron Ore and crystalline Dolomite in canyon northwest of Black Eagle Mine. Iron Chief Mine, Eagle Mountains, Riverside County.

is 150 feet long, with an average width of 4 feet, and is stated to have an average value of $21 per ton in gold, silver, lead, and copper. The vein varies from 3 to 9 feet in width. The ore occurs in lenticular form in the vein. The vein filling is quartz, mineralized with galena, malachite, azurite, cuprite, anglesite, cerrusite, cupro-plumbite, and lead vanadate.

Three carloads of sorted ore have been shipped from the property to the Selby Smelting Works. Average gross value of shipments was $65 per ton. Smelter assay returns on ore: Au, 0.53 ozs.; Ag, 16 ozs.; Pb, 23.3%; Cu, 5.7%.

Equipment: 25-h.p. Fairbanks-Morse, style H gas engine driving 9″ x 8″ Ingersoll-Rand compressor, 3-h.p. Fairbanks-Morse gas engine driving No. 4 Buffalo blower; 1 Tugger hoist, two auto trucks.

Water is hauled from Cottonwood Springs in a 450-gallon tank. Six men are employed.

IRON.

Iron Chief Mine. The Eagle Mountain iron ores are located in the northern part of the Eagle Mountains, northern Riverside County. They are forty miles northeast of Mecca, a station on the Southern Pacific Railroad.

The deposits extend over an area about eight miles long and from a quarter of a mile to two miles wide, running across the summit of the Eagle Mountains in a general east-west direction. The area in which iron ores occur is in T. 3 S., R. 14 E. Holdings comprise 187 patented claims, owned by the *Iron Chief Mining Company*, which company is controlled by the *Southern Pacific Railroad Company*.

The iron ores with associated metamorphic minerals occur as replacements in the dolomite which is found in beds and lenses at two principal horizons in the dolomite and quartzite series. The trend of the iron-bearing belt is approximately N. 70° W. Width of outcrops varies from a few feet to 500 feet. The largest body of mixed ore and gangue material exposed is 6000 feet in length and has a maximum width of outcrop of 500 feet. The ore is predominantly hematite, but here and there consists of magnetite. A considerable percentage is very pure and of high grade, containing between 62% and 67% metallic iron and less than 0.06% phosphorus. E. C. Harder, in Bulletin No. 503 of the U. S. Geological Survey, estimates tonnage at from 40,000,000 to 70,000,000 tons. The iron ore deposits of the Eagle Mountains are fully described in that bulletin.

The only development work noted on the iron deposits, consists of a large number of shallow shafts and tunnels on the different claims. Owing to the limited amount of time at my disposal, only the most prominent outcrops in the neighborhood of the Iron Chief and Black Eagle mines were visited.

Water from Cottonwood Springs was originally piped into the deposits, near the Iron Chief Mine, a distance of eighteen miles.

San Bernardino County.

GOLD.

Mabel, Contention, and Investment Group of Mines. Comprises 12 claims located in the Arrow mining district, twenty-three miles northwest of Fenner, on the eastern slope of the Providence Range of mountains. Elevation 3750 feet. Owner, *Thomas A. Gannon*, Fenner, Cal. Since publication of Report XVII of the State Mineralogist (1920), considerable development has been done on the different claims by Mr.

Gannon and associates of Los Angeles. This work is being confined mainly to the Contention, Mabel and Subway claims.

Developments: The Contention shaft has been sunk on a vein which strikes east and west, with dip 65° S. The vein varies in width from 12 inches to 4 feet. At a depth of 100 feet sulphide ore appears. The

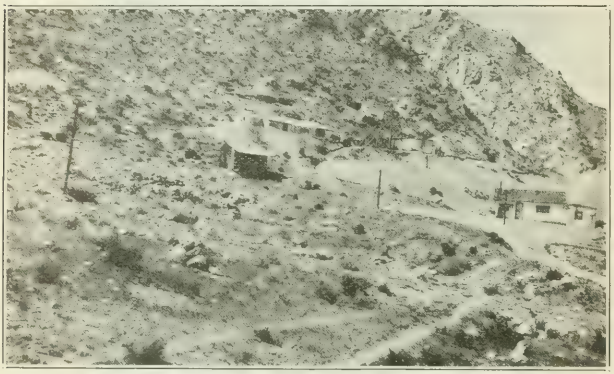
View of Dike and Mill. Mabel-Contention Mines, Providence Mountains, San Bernardino County.

principal production came from ore in the oxidized zone above the 100-foot level. It is stated that sorted ore shipped had a value of $100 per ton. The principal development has been on the 200-foot level, where the vein has been drifted on about 340 feet. Estimated tonnage of ore on dump is 6000 tons, and it is said to assay $5 per ton in gold.

The drift on the 50-foot level of the Subway shaft is being extended north to intersect the workings from the Contention shaft. Approximately 2500 feet north of the Contention shaft, are two shafts known as Mabel No. 1 and No. 2. The vein here strikes N. 20° E., and dips 70° W. Mabel No. 1 shaft is 140 feet deep. Mabel No. 2 shaft is 40 feet deep. The vein exposed in these workings varies in width from 2 to 9 feet. The distance between the two shafts is 750 feet. Ore extracted from these workings is said to have milled $35 per ton. Ore shipped to smelter from these workings is stated to carry over $100 per ton. Two men are employed.

Bibl: State Mineralogist Report XVII, p. 349.

Bonanza King Mine (silver). In the Trojan mining district. It is situated on the eastern slope of the Providence Range of mountains, twenty-five miles east of Fenner, a station on the Santa Fe Railroad.



Bonanza King Mine. Providence Mountains, San Bernardino County.

Elevation 4200 feet. Holdings comprise 12 claims. Owners, *Hall, Rawitser and Company,* Acton, Massachusetts. Property taken over under lease and bond during 1923 by the Bonanza King Consolidated Mines Company. O. B. Bachman, president; Wade Hampton Williams, vice president; A. E. Kinney, secretary.

Orebodies occur along a series of parallel north-south fissures in carboniferous limestone. The fissures are near the contact of limestone and monzonite, and run parallel to the contact. The ore occurs as chloride of silver, and chloro-bromide of silver, with a small percentage of galena.

Present development work is confined to the 3d, 4th, 5th, and 6th levels, where some lenses of ore have been exposed. One car of ore was extracted during May 1924. The present company plans to unwater the winze from the 600-foot level, which is 200 feet deep. Six men are employed. For detailed description of the property see State Mineralogist Report XVII, pp. 360–361.

Buena Vista Group (lead, copper, gold). Comprises 4 claims located in the Arrow Mining District, twenty-two miles northwest of Fenner, in the Providence range of mountains. Owner, *Thomas J. Fitzsimmons,* Hollywood, Cal.

A series of parallel quartz veins in granite and schist strike north-south and dip 40° to 60° W. Widths vary from 2 inches to 2 feet. The quartz is iron stained and carries values in copper, gold and lead.

Developments consist of a number of shallow shafts and open cuts. Only yearly assessment work is done on the property. Idle.

Lead Mountain Mine. Located in the Grapevine mining district, five miles northwest of Yermo. Holdings consist of 640 acres, patented, in Sec. 36, T. 10 N., R. 1 W. Owner, *Western Smelters and Supply Company.* Lewis I. Buck, president; S. A. Court, Secretary. Offices, 503 Chamber of Commerce Building, Los Angeles.

The country rock is tufa, limestone, and andesitic porphyry. The

Lead Mountain Mine. Yermo, San Bernardino County.

ore-bearing fissure strikes northwest-southeast and dips 40° N.E. Width of ore zone is about 100 feet, the orebodies occuring irregularly throughout this area, which has been proved for a distance of 1300 feet along the strike of the fissure. The vein material is a coarsely crystallized baryta with quartz containing brown iron oxides, lead carbonate, ochre, manganese oxide, and silver chlorides. The ore is said to assay: Ag, 6 to 30 ozs.; Au, $0.40 to $2.00; Pb, 15% to 30%.

Developments: The principal workings which are on the south slope of Lead Mountain, consist of a series of open cuts and tunnels along the strike of the ore zone for a distance of 500 feet. The present work is confined to a tunnel which is driven north 75 feet, crosscutting the ore fissure. On this level drifts have been run northwest about 100 feet in the center of the orebody, with some stoping above the level.

Near the portal of the crosscut tunnel, a shaft has been sunk on an incline of 33° for 210 feet. At this point there is a stope 25 feet wide by 50 feet long and 30 feet high. The ore mined is galena and lead

carbonate. This ore occurred along a N. 20° W. fracture. From the floor of the stope there is a vertical winze 240 feet deep which connects with a crosscut tunnel 1300 feet in length, driven from the north side of Lead Mountain.

Equipment: 15-h.p. hoist, cars, and Packard truck. Six men are employed.

OIL FIELD DEVELOPMENT OPERATIONS.

By R. D. Bush, State Oil and Gas Supervisor.

FEATURES OF PRODUCTION, FIRST HALF OF 1924.

The production of oil in California for the first half of 1924 was 118,113,000 barrels as compared with 146,338,069 barrels for the last half of 1923, a decrease of 28,225,000 barrels. The average daily production at the first of 1924 was 700,300 barrels declining to 619,500 barrels on July 1 and shows a steady but gradual decline from the peak of production which occurred during the fall of 1923.

While the production decline of the State has been gradual the decline of the three prolific fields, Santa Fe Springs, Long Beach and Huntington Beach, which produced a large proportion of the oil, has been rather precipitous, but this was offset by additional development of good wells in the Torrance Field, discovery of the Dominguez Field with its large producers, extension of the eastern edge Buena Vista Hills, Kern County, into highly productive territory, and the resumption of closed in production in the older fields of the state.

Consumption also declined and more rapidly than production with the result that storage increased from about 92,000,000 barrels on January 1, 1924, to about 100,000,000 barrels at the end of June. The unexpected decrease in consumption was due to various causes, among them being decreased demand for fuel oil by the largest consumers, the railroads, decreased demand for gasoline resulting from the hoof and mouth disease in California, decreased demand for gasoline east of the Rocky Mountains due to weather conditions and to the continued over-production of oil in the Mid-Continent fields. The last two factors no doubt account for the fact that the export of California oil to eastern and gulf ports was 6,728,000 barrels less during the first half of 1924 than during the previous six months. This amount accounts for practically all the storage increase in the state during the first half of this year.

The total proved oil land of the state as of March 1, 1924, was 116,868 acres, an increase of 4107 acres over the previous year as determined by the State Oil and Gas Supervisor.

The estimated cost of maintaining the Department of Petroleum and Gas for the fiscal year 1923–1924 was $135,917.17. Therefore in order to renew the Petroleum and Gas fund to the maximum of $185,000 allowable by the statute under which the Department functions, oil and gas producers and oil land owners will be subject to a tax, prorated against oil and gas produced during 1923 and proved oil land to bring in a total amount of $135,917.17.

In prorating the assessment one-tenth of the total amount is assessed against the proved oil land and the remaining nine-tenths is levied against the oil produced and sold, as determined from sworn statements of oil and gas producers. For the purpose of assessment ten thousand cubic feet of gas is equivalent to one barrel of oil.

The total production of net oil in 1923 according to sworn statements was 259,882,565 barrels. The total quantity of gas produced and sold was 115,682,200,000 cubic feet. The rate per barrel of oil and per ten thousand cubic feet of gas is $.00045063 to yield a total of $122,325.46.

OIL FIELD DEVELOPMENT OPERATIONS.

From April 12, 1924, to and including July 5, 1924, the following new wells were reported as ready to drill:

Company	Sec.	Twp.	Range	Well No.	Field
ALAMEDA COUNTY:					
Brady Sure Shot Oil Co.....Lot H	2	1	1	---	Alameda County
CONTRA COSTA COUNTY:					
Leachman & Marshall (Acalanes Ranch near Tunnel Road)	--	1	3	1	
FRESNO COUNTY:					
Coalinga Empire Oil Co.	6	21	15	7	Coalinga
Coalinga Lubricating Oil Co.	2	21	14	White Creek 6	Coalinga
Netherlands Oil Co.	26	20	14	6	Coalinga
Pacific Oil Co.	25	20	14	108	Coalinga
Premier Oil Co.	24	20	14	25	Coalinga
St. Paul Consolidated Oil Co.	23	20	14	10	Coalinga
Salvia Oil Co.	14	20	14	10	Coalinga
Ward Oil Co.	12	20	14	11	Coalinga
Albert W. Baxter	18	22	16	Baxter 1	Fresno County
Thomas M. Crum	20	21	17	1	Fresno County
E. J. Miley	7	22	16	1	Fresno County
KERN COUNTY:					
Belridge Oil Co.	34	30	24	15X	Elk Hills
Pacific Oil Co.	25	30	24	10	Elk Hills
Pacific Oil Co.	27	30	24	113	Elk Hills
Pacific Oil Co.	35	30	24	91	Elk Hills
Pacific Oil Co.	35	30	24	103	Elk Hills
Pan American Petroleum Co.	2	31	24	Crampton 11-F	Elk Hills
Pan American Petroleum Co.	6	31	25	Crampton 13-A	Elk Hills
Standard Oil Co.	31	30	25	Kern Co. 18	Elk Hills
Robert Barry	34	27	27	1	Kern County
Marland Oil Co.	28	25	21	1	Kern County
Geo. A. Parsons	10	31	38	1	Kern County
Geo. F. Getty	14	28	27	1	Kern River
Gray Heirs	3	29	28	46	Kern River
L. M. Howland	2	29	28	8	Kern River
Marland Oil Co.	16	28	27	Cauley 1	Kern River
E. A. Parkford	13	29	28	1	Kern River
S. G. Tryon	2	29	28	8	Kern River
Associated Oil Co.	2	31	22	61	Midway
Associated Oil Co.	22	31	23	81	Midway
Balboa Oil Co.	24	31	23	30	Midway
Bell-Evans Oil Co., Inc.	35	32	23	6	Midway
Berry & Ewing	31	32	24	6	Midway
Big Ten Oil Co.	36	32	23	7	Midway
Boston Pacific Oil Co.	32	31	24	4-C	Midway
Brady Oil Co.	34	32	24	1	Midway
Brookshire Oil Co.	24	31	22	12	Midway
Formax Oil Co.	36	32	23	16	Midway
General Petroleum Corp.	32	31	24	Buena Vista 9	Midway
Honolulu Consolidated Oil Co.	4	32	24	71	Midway
Honolulu Consolidated Oil Co.	6	32	24	78	Midway
Honolulu Consolidated Oil Co.	8	32	24	12	Midway
Interstate Oil Corp.	15	32	23	Empire 11	Midway
Kendon Petroleum Co.	35	32	23	3	Midway
Mascot Oil Co.	36	32	23	4	Midway
Midland Oilfields Co., Ltd.	24	31	23	7	Midway
Midland Oilfields Co., Ltd.	24	31	23	8	Midway
Midland Oilfields Co., Ltd.	34	31	24	4	Midway
Midway Oil Co.	36	32	23	Alpine 5	Midway
Midway Oil Co.	36	32	23	Alpine 7	Midway
E. H. Mitchell Co.	15	31	22	12	Midway
Naval Reserve Oil Co.	8	31	23	1	Midway
North American Oil Cons.	30	31	24	8	Midway

Company	Sec.	Twp.	Range	Well No.	Field
KERN COUNTY—Continued.					
North American Oil Cons.	30	31	24	9	Midway
Pacific Oil Co.	25	31	23	31	Midway
Pacific Oil Co.	25	31	23	66	Midway
Pacific Oil Co.	31	31	24	24	Midway
Pacific Oil Co.	31	31	24	37	Midway
Pacific Oil Co.	31	31	24	68	Midway
Pacific Oil Co.	31	31	24	69	Midway
Pacific Oil Co.	33	31	24	20	Midway
Pacific Oil Co.	33	31	24	22	Midway
Pacific Oil Co.	1	32	23	83	Midway
Pacific Oil Co.	1	32	23	84	Midway
Pacific Oil Co.	3	32	24	2	Midway
Pinal Dome Corp.	22	31	22	Weir 1	Midway
Southwestern Petroleum Co.	2	31	22	6	Midway
Surprise Oil Co.	36	32	23	4	Midway
Tumbador Oil Co.	23	31	22	16	Midway
B. B. & O. Oil Co.	28	12	24	26	Sunset
B. B. & O. Oil Co.	28	12	24	30	Sunset
C. J. Berry	34	12	24	Hillside 24	Sunset
C. J. Berry	34	12	24	Hillside 28	Sunset
C. J. Berry	34	12	24	Hillside 29	Sunset
C. J. Berry	34	12	24	Hillside 30	Sunset
C. J. Berry	34	12	24	Hillside 31	Sunset
Border Oil Co.	2	11	24	10	Sunset
Empire Gas & Fuel Co.	4	11	23	1	Sunset
Ethel D. Co.	36	12	24	1-A	Sunset
General Petroleum Corp.	18	11	23	226-A	Sunset
General Petroleum Corp.	19	11	23	106-A	Sunset
General Petroleum Corp.	20	11	23	1-A	Sunset
General Petroleum Corp.	35	12	24	1-A	Sunset
E. G. Lewis	20	11	23	12	Sunset
Martin Judge, Jr.	32	12	24	1	Sunset
Midway Oil Co.	28	12	24	10	Sunset
Midway Oil Co.	34	12	24	161	Sunset
Midway Oil Co.	34	12	24	171	Sunset
Midway Oil Co.	34	12	24	181	Sunset
Midway Oil Co.	34	12	24	191	Sunset
Pliocene Oil Co.	18	11	23	2	Sunset
Charles A. Son	32	12	23	U. S. 1	Sunset
Standard Oil Co.	10	11	23	Rass 1	Sunset
Western Minerals Co.	17	11	23	2	Sunset
Earl S. Shaw	1	29	20	1	Temblor
Standard Oil Co.	28	11	20	Kern Co. Lease No. 2 12	Wheeler Ridge
Standard Oil Co.	28	11	20	Kern Co. Lease No. 2 13	Wheeler Ridge
KINGS COUNTY:					
Bolsa Chica Oil Co.	30	23	19	Downing 1	Kings County
Marland Oil Co.	12	22	17	Elliott 1	Kings County
LAKE COUNTY:					
Lake County Drilling & Dev. Co.	35	13	7	1	Lake County
LOS ANGELES COUNTY:					
A. Otis Birch	32	3	13	1	Dominguez
Marland Oil Co.	3	4	13	Dominguez 1	Dominguez
Shell Co.	33	3	13	Reyes 6	Dominguez
Shell Co.	33	3	13	Reyes 7	Dominguez
Shell Co.	34	3	13	Reyes 8	Dominguez
Shell Co.	34	3	13	Reyes 9	Dominguez
Shell Co.	34	3	13	Reyes 10	Dominguez
Shell Co.	34	3	13	Childs 2	Dominguez
Superior Oil Co.	34	3	13	Carpenter 1	Dominguez
Union Oil Co.	28	3	13	Callender 5	Dominguez
Union Oil Co.	33	3	13	Carson 2	Dominguez
Union Oil Co.	33	3	13	Hellman 5	Dominguez
Union Oil Co.	33	3	13	Hellman 6	Dominguez
Union Oil Co.	34	3	13	Hellman 7	Dominguez
The United Oil Co. and Henderson Petroleum Corp.	3	4	13	Dominguez 1	Dominguez

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES COUNTY—Continued.					
E. L. Blanton, trustee	29	4	12	T-2	Long Beach
Courtney Petroleum Co	19	4	12	1	Long Beach
Courtney Petroleum Co	30	4	12	2	Long Beach
Dabney Oil Syn., Inc	30	4	12	24	Long Beach
Davis & Macmillan Co	29	4	12	9	Long Beach
General Petroleum Corp	19	4	12	Black & Signal 2	Long Beach
A. T. Jergins Trust	19	4	12	13	Long Beach
L. A. Lambert	30	4	12	Cowden 1	Long Beach
Petroleum Midway Co., Ltd	19	4	12	Davidson 5	Long Beach
Petroleum Midway Co., Ltd	19	4	12	Fields 5	Long Beach
Petroleum Midway Co., Ltd	19	4	12	Fields 7-A	Long Beach
Petroleum Midway Co., Ltd	19	4	12	Fields 8	Long Beach
Shell Co	20	4	12	Coseboom 5	Long Beach
Shell Co	29	4	12	Bixby 3	Long Beach
Shell Co	29	4	12	Jones Comm. 6	Long Beach
Shell Co	29	4	12	Nesa 6	Long Beach
Whiston Petroleum Co	24	4	13	1	Long Beach
Associated Oil Co	17	3	13	Brockley 1	Los Angeles County
Associated Oil Co	20	3	13	Higgins 1	Los Angeles County
Bankline Oil Co.	18	3	13	Gordon 1	Los Angeles County
Bandini Petroleum Co	21	2	12	2	Los Angeles County
H. A. Bardeen	3	2	10	2	Los Angeles County
Barnsdall Oil Co	20	3	13	Rosecrans 1	Los Angeles County
General Petroleum Corp	18	3	13	Amestoy 1	Los Angeles County
General Petroleum Corp	18	3	13	Vaughan 1	Los Angeles County
Fred W. Heath, trustee	36	3	14	1	Los Angeles County
Hermosa Syndicate	30	3	14	2	Los Angeles County
Jackson, Pearson & Todd	36	5	15	1	Los Angeles County
C. C. Julian	17	3	13	Julian 9	Los Angeles County
Julian Petroleum Corp	7	3	13	Athens Comm. 1	Los Angeles County
Mathews Petroleum Corp	17	3	13	Williams 1	Los Angeles County
Mathews Petroleum Corp	20	3	13	Ball 1	Los Angeles County
B. C. Morrison	20	3	13	1	Los Angeles County
Ring Petroleum Corp	20	3	13	Robertson 1	Los Angeles County
B. Rosenburg	35	3	14	2	Los Angeles County
Sandburg Petroleum Co	20	3	13	1	Los Angeles County
Sentinel Oil Co	12	3	14	Brown 1	Los Angeles County
Standard Oil Co	17	2	14	L. A. Inv. 1 2	Los Angeles County
Standard Oil Co	17	2	14	L. A. Inv. 2 1	Los Angeles County
Standard Oil Co	34	2	14	Potter & Smith 1	Los Angeles County
Standard Oil Co	17	3	13	Cowan 1	Los Angeles County
Superior Oil Co	12	2	11	Andres 1	Los Angeles County
Superior Oil Co	13	2	11	A-1	Los Angeles County
Temple & LaFever	24	5	17	1	Los Angeles County
Union Oil Co	17	3	13	Chandler 1	Los Angeles County
Union Oil Co	17	3	13	Hursey 1	Los Angeles County
Union Oil Co	17	3	13	Padelford 1	Los Angeles County
Union Oil Co	17	3	13	Zins 1	Los Angeles County
Union Oil Co	18	3	13	Athens 2	Los Angeles County
Union Oil Co	18	3	13	Trust 1	Los Angeles County
Union Oil Co	19	3	13	Rosecrans 2	Los Angeles County
McGinley Oil Co	6	2	11	18	Montebello
Standard Oil Co	2	2	12	Howard & Smith 2	Montebello
George A. Denison	2	3	16	1	Newhall
Crawford Syndicate Oil Co	13	3	16	2	Newhall
Associated Oil Co	10	3	11	McNally 2	Santa Fe Springs
Standard Oil Co	36	2	12	A. O. Houghton 2	Santa Fe Springs
Standard Oil Co	36	2	12	W. L. Houghton 3	Santa Fe Springs
Standard Oil Co	36	2	12	Jordan 6	Santa Fe Springs
Standard Oil Co	36	2	12	Santa Gertrudes 10	Santa Fe Springs
Union Oil Co	6	3	11	Bell 26	Santa Fe Springs
Union Oil Co	6	3	11	Bell 27	Santa Fe Springs
Standard Oil Co	1	3	12	Orr 4	Santa Fe Springs
Associated Oil Co	16	4	14	Cunningham 1	Torrance
Associated Oil Co	16	4	14	Cunningham 2	Torrance
Associated Oil Co	16	4	14	Cunningham 3	Torrance
Bonded Oil Syn.	23	4	14	2	Torrance
C. C. M. O. Co	2	4	14	Francis 1	Torrance

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES COUNTY—Continued.					
C. C. M. O. Co.	14	4	14	Kettler 21	Torrance
C. C. M. O. Co.	14	4	14	Torrance 52	Torrance
C. C. M. O. Co.	14	4	14	Torrance 53	Torrance
C. C. M. O. Co.	15	4	14	Torrance 38-A	Torrance
C. C. M. O. Co.	15	4	14	Torrance 44	Torrance
C. C. M. O. Co.	15	4	14	Torrance 45	Torrance
C. C. M. O. Co.	15	4	14	Torrance 48	Torrance
C. C. M. O. Co.	15	4	14	Torrance 49	Torrance
C. C. M. O. Co.	15	4	14	Torrance 57	Torrance
C. C. M. O. Co.	15	4	14	Torrance 58	Torrance
C. C. M. O. Co.	15	4	14	Torrance 60	Torrance
C. C. M. O. Co.	15	4	14	Torrance 61	Torrance
C. C. M. O. Co.	15	4	14	Torrance 62	Torrance
C. C. M. O. Co.	15	4	14	Torrance 63	Torrance
C. C. M. O. Co.	15	4	14	Torrance 64	Torrance
C. C. M. O. Co.	15	4	14	Torrance 65	Torrance
C. C. M. O. Co.	15	4	14	Torrance 66	Torrance
C. C. M. O. Co.	15	4	14	Torrance 68	Torrance
C. C. M. O. Co.	15	4	14	Torrance 69	Torrance
C. C. M. O. Co.	16	4	14	Del Amo 15	Torrance
C. C. M. O. Co.	16	4	14	Del Amo 17	Torrance
C. C. M. O. Co.	16	4	14	Del Amo 18	Torrance
C. C. M. O. Co.	16	4	14	Del Amo 19	Torrance
C. C. M. O. Co.	23	4	14	Kettler 20	Torrance
George B. Clark	30	4	14	1	Torrance
Collins & Dean	23	4	14	1	Torrance
Consolidated Mutual Oil Co.	19	4	13	Oakley 2	Torrance
Consolidated Mutual Oil Co.	19	4	13	Oakley 3	Torrance
W. C. Currier	16	4	14	1	Torrance
Fullerton Oil Co.	8	4	14	Waddell 3	Torrance
Fullerton Oil Co.	16	4	14	Barlow 1	Torrance
Fullerton Oil Co.	16	4	14	Cotton 2	Torrance
Fullerton Oil Co.	16	4	14	Cotton 4	Torrance
Fullerton Oil Co.	16	4	14	Cotton 6	Torrance
Fullerton Oil Co.	16	4	14	Cotton 8	Torrance
B. Gildner	23	4	14	2	Torrance
A. T. Krauss & L. E. Bayer	23	4	14	1	Torrance
R. S. McKeon	23	4	14	4	Torrance
E. J. Miley	24	4	14	Torrance 7	Torrance
Pan American Petroleum Co.	13	4	14	Parmer 1	Torrance
Pan American Petroleum Co.	24	4	14	Andrews 1	Torrance
Pan American Petroleum Co.	24	4	14	DeWitt 1	Torrance
Pan American Petroleum Co.	24	4	14	Hub 2	Torrance
Pan American Petroleum Co.	24	4	14	Pate 1	Torrance
Pan American Petroleum Co.	24	4	14	Pate 2	Torrance
Pan American Petroleum Co.	24	4	14	Rinehart 1	Torrance
Petroleum Midway Co., Ltd.	8	4	14	Dawson 1	Torrance
Petroleum Midway Co., Ltd.	13	4	14	Logan 3	Torrance
Petroleum Midway Co., Ltd.	16	4	14	Gilman 1	Torrance
Petroleum Midway Co., Ltd.	24	4	14	Logan 2	Torrance
R-K Drilling Co., Inc.	23	4	14	"McKissick Lease" R-K 2	Torrance
Selby & Root Co.	14	4	14	8	Torrance
Selby & Root Co.	14	4	14	9	Torrance
Sentinel Oil Co.	24	4	14	Joughin 8	Torrance
Sentinel Oil Co.	24	4	14	Joughin 9	Torrance
Sentinel Oil Co.	24	4	14	Joughin 10	Torrance
Sentinel Oil Co.	24	4	14	Joughin 11	Torrance
Shell Co.	9	4	14	Torrance 2	Torrance
Shell Co.	13	4	14	Bluemle 7	Torrance
Shell Co.	13	4	14	March 7	Torrance
Shell Co.	13	4	14	March 8	Torrance
Shell Co.	13	4	14	March 9	Torrance
Shell Co.	24	4	14	Bluemle 3	Torrance
Shell Co.	24	4	14	Bluemle 4	Torrance
Shell Co.	24	4	14	Bluemle 5	Torrance
Shell Co.	24	4	14	Bluemle 6	Torrance
Shell Co.	24	4	14	Bluemle 8	Torrance
Shell Co.	24	4	14	Bluemle 9	Torrance
Shell Co.	24	4	14	Bluemle 10	Torrance

Company	Sec.	Twp.	Range	Well No.	Field
LOS ANGELES COUNTY—Continued.					
Shell Co.	24	4	14	Kettler 12	Torrance
Shell Co.	24	4	14	Kettler 13	Torrance
Shell Co.	24	4	14	Kettler 14	Torrance
Shell Co.	24	4	14	March 6	Torrance
Shell Co.	24	4	14	Scarborough 1	Torrance
Shell Co.	24	4	14	Scarborough 2	Torrance
Shell Co.	24	4	14	Scarborough 3	Torrance
Shell Co.	24	4	14	Scarborough 4	Torrance
Shell Co.	24	4	14	Scarborough 5	Torrance
Shell Co.	24	4	14	Scarborough 6	Torrance
Standard Oil Co.	19	4	13	Joughin 3	Torrance
Standard Oil Co.	19	4	13	Joughin 5	Torrance
Standard Oil Co.	19	4	13	Joughin 7	Torrance
Standard Oil Co.	13	4	14	Dominguez 4	Torrance
Standard Oil Co.	13	4	14	Dominguez 6	Torrance
Standard Oil Co.	13	4	14	Dominguez 7	Torrance
Standard Oil Co.	13	4	14	Dominguez 8	Torrance
Standard Oil Co.	13	4	14	Dominguez 9	Torrance
Standard Oil Co.	13	4	14	Dominguez 10	Torrance
Standard Oil Co.	15	4	14	Marble Fee 8	Torrance
Standard Oil Co.	15	4	14	Marble Fee 9	Torrance
Standard Oil Co.	15	4	14	Marble Fee 10	Torrance
Standard Oil Co.	15	4	14	Marble Fee 11	Torrance
Standard Oil Co.	15	4	14	Marble Fee 12	Torrance
Standard Oil Co.	15	4	14	Marble Fee 13	Torrance
Standard Oil Co.	15	4	14	Marble Fee 15	Torrance
Standard Oil Co.	15	4	14	Marble Fee 16	Torrance
Standard Oil Co.	15	5	14	Marble Fee 17	Torrance
Standard Oil Co.	15	5	14	Marble Fee 18	Torrance
Standard Oil Co.	22	4	14	Marble Lease 7	Torrance
Standard Oil Co.	22	4	14	Marble Lease 8	Torrance
Standard Oil Co.	22	4	14	Marble Lease 9	Torrance
Standard Oil Co.	22	4	14	Marble Lease 10	Torancer
Standard Oil Co.	22	4	14	Marble Lease 11	Torrance
Standard Oil Co.	22	4	14	Marble Lease 12	Torrance
Standard Oil Co.	23	4	14	Kettler 2	Torrance
Standard Oil Co.	23	4	14	Kettler 3	Torrance
Standard Oil Co.	24	4	14	Joughin 1	Torrance
Standard Oil Co.	24	4	14	Joughin 2	Torrance
Standard Oil Co.	24	4	14	Joughin 4	Torrance
Standard Oil Co.	24	4	14	Joughin 6	Torrance
Superior Oil Co.	19	4	13	Torrance 37	Torrance
Superior Oil Co.	19	4	13	Torrance 38	Torrance
Superior Oil Co.	19	4	13	Torrance 39	Torrance
Superior Oil Co.	19	4	13	Torrance 44	Torrance
Superior Oil Co.	24	4	14	Torrance 28	Torrance
Superior Oil Co.	24	4	14	Torrance 31	Torrance
Superior Oil Co.	24	4	14	Torrance 32	Torrance
Superior Oil Co.	24	4	14	Torrance 33	Torrance
Superior Oil Co.	24	4	14	Torrance 34	Torrance
Superior Oil Co.	24	4	14	Torrance 35	Torrance
Superior Oil Co.	24	4	14	Torrance 40	Torrance
Superior Oil Co.	24	4	14	Torrance 41	Torrance
Walter A. Wyatt	23	4	14	1	Torrance
Woolner Oil Co.	23	4	14	Lomita 2	Torrance
Associated Oil Co.	17	2	11	Gregg 1	Whittier
Pan American Petroleum Co.	17	2	11	Jesuran 1	Whittier
MONTEREY COUNTY:					
John C. Guerrier	3	20	7	1	Monterey County
ORANGE COUNTY:					
Brea Canon Oil Co.	2	3	10	36	Brea Olinda
Standard Oil Co.	18	3	10	M-C 100	Coyote Hills
Standard Oil Co.	13	3	11	Emery 39	Coyote Hills
General Petroleum Corp.	2	6	11	Dabney 2	Huntington Beach
Pan American Petroleum Co.	11	6	11	Johnson 3	Huntington Beach
Petroleum Midway Co., Ltd.	11	6	11	Brown 4	Huntington Beach
Standard Oil Co.	34	5	11	Bolsa 16	Huntington Beach

Company	Sec.	Twp.	Range	Well No.	Field
ORANGE COUNTY—Continued.					
Standard Oil Co.	34	5	11	Bolsa 17	Huntington Beach
Standard Oil Co.	2	6	11	Hunt. B. 24	Huntington Beach
Standard Oil Co.	3	6	11	Hunt. A. 24	Huntington Beach
Standard Oil Co.	3	6	11	Hunt. A. 25	Huntington Beach
Standard Oil Co.	3	6	11	Hunt. B. 26	Huntington Beach
Standard Oil Co.	12	6	11	Farnsworth 3	Huntington Beach
Standard Oil Co.	14	6	11	Mills 3	Huntington Beach
Gross Drilling Co.	2	5	11	1	Orange County
Trustees Development Association	6	5	9	1	Orange County
Monarch Development Co.	28	6	10	Monarch 1	Newport
Capitol Oil Co.	29	3	8	3	Richfield
Chiksan Oil Co.	32	3	9	1	Richfield
S. H. Keoughan, trustee	24	3	9	1	Richfield
Union Oil Co.	29	3	9	Morse 6	Richfield
SAN BERNARDINO COUNTY:					
Como Oil Co.	14	3	6	1	San Bernardino Co.
Mojave Basin Oil Co.	2	10	5	1	San Bernardino Co.
Victor Valley Land Owners Oil & Gas Co.	22	5	6	Victor 1	San Bernardino Co.
SAN DIEGO COUNTY:					
Pacific Coast Petroleum Corp.	23	11	5	1	San Diego County.
SAN LUIS OBISPO COUNTY:					
Little Bear Oil Co.	2	32	22	1	San Luis Obispo Co.
Oak Ridge Oil Co.	4	25	12	Mahoney 1	San Luis Obispo Co.
J. E. Russell	28	31	21	1	San Luis Obispo Co.
SAN MATEO COUNTY:					
H. H. McClintock	Sho	ults R	anch	1	San Mateo Co.
Midstate Oil Co.	16	6	5	3	San Mateo County
SANTA BARBARA COUNTY:					
Brooks Oil Co.	32	9	32	4	Cat Canyon
Brooks Oil Co.	32	9	32	5	Cat Canyon
Channel Oil & Development Co.	--	4	27	1	Santa Barbara Co.
La Mesa Oil Co.	7 (Tra	ct 5, R	ancho		
	Las	Posit	as)	1	Santa Barbara Co.
TULARE COUNTY:					
Thos. L. Woodruff	17	22	27	1	Tulare County
VENTURA COUNTY:					
Dr. J. Von Gal-Scale	4	1	20	14	Conejo
Dr. J. Von Gal-Scale	4	1	20	15	Conejo
Dr. J. Von Gal-Scale	4	1	20	16	Conejo.
Hess-Rue-Henderson Oil Co.	33	4	23	2	Ojai
A. H. McFarland	33	4	18	2	Piru
Peacock Refining Co.	8	4	18	1	Piru
Arthur Apple Petroleum	27	4	21	1	Santa Paula
Caltura Oil Co.	25	4	22	15	Santa Paula
Lincoln Oil & Gas	21	4	21	29	Santa Paula
K. A. P. Oil Co.	32	3	20	1	Simi
Oak Ridge Oil Co.	18	3	20	Willard 15	South Mountain
Union Oil Co.	13	3	21	Snyder 1	South Mountain
Associated Oil Co.	27	3	23	Lloyd 9	Ventura
Associated Oil Co.	28	3	23	Lloyd 14-A	Ventura
Shell Co.	27	3	23	Gosnell 6	Ventura
Shell Co.	28	3	23	Gosnell 7	Ventura
Shell Co.	28	3	23	Taylor 7	Ventura

SPECIAL ARTICLES.

Detailed technical reports on special subjects, the result of research work or extended field investigations, will continue to be issued as separate bulletins by the Bureau, as has been the custom in the past.

Shorter and less elaborate technical papers and articles by members of the staff and others are published in each number of 'Mining in California.'

It is anticipated that these special articles will cover a wide range of subjects both of historical and current interest; descriptions of new processes, or metallurgical and industrial plants, new mineral occurrences, and interesting geological formations, as well as articles intended to supply practical and timely information on the problems of the prospector and miner, such as the text of new laws and official regulations and notices affecting the mineral industry.

OIL AND GAS RIGHTS.

By A. H. Ricketts, of the bar of the Supreme Court of the United States, of California and of Nevada.

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Part III.

WITHDRAWALS—PICKETT ACT—FEDERAL WATER POWER ACT—RECLAMATION PROJECTS.

§ 1. The President's Withdrawal Order.
§ 2. Power of the President.
§ 3. The Pickett Act.
§ 4. Act of August 25, 1914.
§ 5. Federal Water Power Act.
§ 6. Reclamation Projects.
§ 7. Mineral Lands Withdrawn.
§ 8. Default in Assessment Work.
§ 9. Jurisdiction of Land Department.

§ 1. The President's Withdrawal Order.

The President's withdrawal order of September 27, 1909, "in aid of proposed legislation" withdrawing oil lands in California and Wyoming from entry or disposal under the mineral laws did not withdraw such lands from the right to enter, locate nor purchase merely. Its manifest object, as the language plainly shows, was to preserve the petroleum in the lands in order to subserve the public interest. Its purpose was to withdraw such lands from the right to explore for oil or to extract and dispose of the same. The lands are valuable only for their mineral contents and the express purpose of the withdrawal order was to preserve such contents until Congress should provide for their disposition and when withdrawn the lands ceased to be public lands within the meaning of the mining law and hence not open for exploration nor discovery under such laws.[1] Such withdrawal order is ineffectual as against a title previously acquired.[2]

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[1] U. S. vs. Midway Northern Oil Co., 232 Fed. 627. This withdrawal was confirmed in executive order of July 2, 1910, creating Petroleum Reserve No. 2, which said reservation was made subject to all the provisions, limitations, exceptions and conditions of the Pickett Act, *infra*, § 3. Interstate Oil Corp. 50 L. D. 262.

A petroleum withdrawal prior to the Leasing Act of unproved lands for the purpose of classification, was not extinguished by the passage of that act, inasmuch as the prospecting for oil and gas thereunder was intended merely as preliminary to leasing and not as a method of disposal, they being only subject to lease upon discovery of their value for mineral deposits. Utah vs. Lichliter (on reconsideration), 50 L. D. 231.

Lands within the forfeited grant to a railroad company that have been classed as "power site lands" under the authority of the act of June 9, 1916 (39 Stat. 218), and

§ 2. Power of the President.

The power of the President to make withdrawal orders was upheld by the Supreme Court of the United States[3] and authorized by the "Pickett Act."[4]

§ 3. The Pickett Act.

The act of June 25, 1910, did not in any way affect the Presidential withdrawal order of September 27, 1909.[5] It authorized withdrawals "for water power sites, irrigation, classification of lands or other public purposes to be specified in the orders of withdrawal." This act was amended on August 24, 1912,[6] so as to include nonmetalliferous minerals and provided that it should not be construed as a repudiation, abridg-

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included within a power site reserve by Executive order issued pursuant to the Pickett Act, are open to exploration, discovery, and purchase under the mining laws only so far as those laws apply to metalliferous minerals. Dailey Clay Co., 48 L. D. 429.

[2] Stockley vs. U. S., 260 U. S. 532; N. P. R. Co. vs. Mitchell, 208 Fed. 469; Knudsen vs. Omanson, 10 Utah 124, 37 Pac. 250. As to state selections see Wyoming vs. U. S., 255 U. S. 489. It was not the intention of the President acting for and on behalf of his principal, the United States government, to except from the operation of the withdrawal order all claims or locations that might then be subsisting upon lands included within the order. Special pains were taken to indicate that the intention of the President was that only valid locations or claims were to be excepted from the general operation of the withdrawal order. The effect of the withdrawal order depends upon what is meant by a valid location or claim. Under the mining laws the locator has no vested right as against the government until he makes a discovery of oil upon his claim. The posting or recording of his oil placer claim gives him no rights as against the United States until by discovery of oil it is made apparent that the land in truth and in fact is mineral land and subject to location under the mining law. The initiation of his claim by posting notices protects him as against third persons so long as he remains in possession and with due diligence prosecutes his claim toward a discovery. Although this gives him no vested rights against the government yet he has rights which ought to be by all parties respected. All locators who were thus conducting themselves at the time of the withdrawal order had their rights respected by the exception contained therein. If on the date of the withdrawal order any locator then was on any withdrawn lands and was with "due diligence" prosecuting his work toward a discovery of oil, he was not affected by such order, and had a valid location and could proceed to a discovery and thereby perfect his right to the mineral claim. But a locator not in possession or who was not with "due diligence" prosecuting his work toward discovery, was not protected by the order. A person or locator deeming the withdrawal order entirely invalid can not after its date either begin or resume operations looking to the discovery of oil upon his claim, for the reason that the land by reason of such order was no longer open to entry or claim and as between him and the government any subsequent effort of his could not divest the United States of its title. U. S. vs. McCutchen, 234 Fed. 709; see, also, U. S. vs. McCutchen, 217 Fed. 655. For an instance of failure to support the claim of diligent prosecution of work looking to discovery see U. S. vs. Chanslor-Canfield Co., 266 Fed. 143.

It has been decided that a homestead entryman upon withdrawn lands does not acquire the right to an oil well derrick and other fixtures erected by a mineral claimant prospecting for oil under locations made before the withdrawal and before the homestead entry where the mineral claimant has not abandoned his rights and is seeking to maintain them as against the homestead entryman and the government. That the homestead entryman acquires no title to the minerals in the land either by the entry or by the patent issued in pursuance thereof. These are reserved to the government. Hence under the homestead entry no rights are secured to the oil below the surface, nor to the right to prospect therefor. Son vs. Adamson, 188 Cal. 99; 204 Pac. 392; see, also, Midland Oil Co. vs. Rudneck, 188 Cal. 265; 204 Pac. 174.

[3] U. S. vs. Midwest Oil Co., 236 U. S. 459; Stockley vs. U. S., *supra* (2). A withdrawal order promulgated by the Secretary of the Interior is deemed the act of the President. Stockley vs. U. S., 271 Fed. 632.

[4] 5 U. S. Comp. St. p. 5320, § 4523.

[5] See § 1, *supra*.

[6] 5 U. S. Comp. St. p. 5320, § 4523, amended, Id. p. 5321, § 4524. See act of January 26, 1921, Fed. Stats. Anno. 1921, p. 268. The Pickett Act is the first legislative recognition by Congress of a statutory right in an occupant of public oil lands prior to discovery. It was manifestly intended to and does expressly give to those coming within its provisions a legal status and a right to continue work of discovery with the attendant consequences. Its purpose was to protect *bona fide* occupants of public oil or gas lands who in good faith were, at the date of the withdrawal, engaged in work leading to discovery, by giving them the right to continue their work to a discovery, and thereafter to extract and market the oil, and to acquire title notwithstanding the withdrawal. U. S. vs. Rock Oil Co., 257 Fed. 333. The term "metalliferous minerals" in the Pickett Act was used to describe those minerals or ores of economic value from which the useful metals can be directly and advantageously extracted. Con. Ores Co., 46 L. D. 468. The right of withdrawal exists in the President without special authorization from congress. Stockley vs. U. S., *supra* (3).

ment, or enlargement of any asserted rights or claims initiated upon any oil- or gas-bearing lands after any withdrawal of such lands prior to the passage of the act. The statute did not indicate an intention to nullify or affect the validity of previous orders withdrawing oil- or gas-bearing lands, but shows an intention on the part of Congress to regulate withdrawals after its passage and to grant relief to those who were in diligent prosecution of work leading to the discovery of oil or gas at the date of the previous withdrawal. There is nothing to indicate the slightest intention to nullify, cancel, or repudiate withdrawals of oil- or gas-bearing lands already made. It is remedial in its nature and should be liberally construed.[7]

§ 4. Act of August 25, 1914.

This law [8] was amendatory of the act of March 2, 1911,[9] and provided for working reserved lands prior to the issuance of patents therefor and the disposal of the proceeds thereof.

§ 5. Federal Water Power Act.

The Federal Water Power Act of June 10, 1920,[10] sought to provide for the development of water power and the use of the public lands in relation thereto and granted certain limited authority to the Federal Power Commission, which, under the law, is charged with the adminis-

[7] U. S. vs. Midway Northern Oil Co., *supra* (1); U. S. vs. Standard Oil Co., 265 Fed. 762; see, also, U. S. vs. Ohio Oil Co., 240 Fed. 1005; U. S. vs. Stockton Midway Oil Co., 240 Fed. 1009. A withdrawal under this act is, in its nature, a continuing withdrawal which, although not attaching to land that at date of withdrawal was within a valid subsisting location, attaches immediately upon default of the claimant thereafter. This because the provision in § 2324, Revised Statutes (5 U. S. Comp. St. p. 5525, § 4620), declaring that a mining claim upon which the required annual assessment work has not been performed shall be subject to relocation in the same manner as if no location of the same had ever been made, impresses the land in a defaulted claim with the status of public land which as long as it remains in that state may be withdrawn by the government. Interstate Oil Corp. *supra* (1) citing and applying cases of Navajo Ind. Reservation, 30 L. D. 515, and Kinney, 44 L. D. 580. In November, 1908, paper locations were posted by one person in the name of sundry persons claiming the several tracts under the placer mining law, they being at the time vacant, unoccupied mineral lands of the United States. After some transfers and consolidation of claims, the associates entered into a contract with an oil company for the development of one particular property and the oil company under the contract was diligently engaged in work leading to discovery on September 27, 1909, when the land was included in the presidential withdrawal order of that date. Work of development continued after the withdrawal and oil was discovered in December, 1909, involving an expense of a large amount of money. The locations were alleged to be fraudulent and void, because they were made for the purpose of enabling one of the associates to acquire more land within a single location than the law permits. But there could be no reason why the persons succeeding to the rights of the original locators should not be deemed to be *bona fide* occupants at the date of the withdrawal within the meaning of the Pickett Act, where they innocently obtained possession in the first instance from some one who was attempting to acquire more land than the law permitted. Their right was not deraigned from, nor did it depend upon a prior location but upon the terms of the said act. They were occupying and holding in their own right and as persons lawfully entitled to acquire the property under the mining laws. Their possession was not tainted with the fraud of the prior attempted locator whom they did not represent and in whose interest and for whose benefit they were not holding. U. S. vs. Rock Oil Co., 257 Fed. 332. See, also, U. S. vs. North American Oil Co., 242 Fed. 723; Con. Mutual Oil Co. vs. U. S., 245 Fed. 521. *Compare* U. S. vs. McCutchen, *supra* (2), and 238 Fed. 575.

[8] 5 U. S. Comp. St. p. 5681, § 4637*a*. See Estate of Ladd (on rehearing), 48 L. D. 313.

[9] 5 U. S. Comp. St. p. 5681, § 4637. This act provided that patents for oil and gas lands should not be denied because of transfer prior to discovery of oil or gas therein. See Cole vs. Ralph, 252 U. S. 286. The manifest purpose of this law was to provide a temporary method of operating mining claims embraced in applications for patents and conserving the proceeds until it could be decided whether the lands belonged to the claimants or to the government, without resorting to receivership proceedings. Following this act, the Secretary of the Interior entered into agreements with applicants for patents to land outside the naval reserves and not already in suit, which provide for deposits in escrow of one-eighth of the gross production pending the determination of title.

[10] Supp. Fed. Stats. Ann. 1920, p. 367, amended. Supp. Fed. Stats. 1921, p. 333. This act does not cover the whole subject nor provide a complete system of law displacing

tration of said act. Under the provisions of § 24 of this act any lands of the United States included in any proposed project become reserved from entry, location or other disposal under the laws of the United States, from the date of the filing of the application therefor. If the Commission determines that the value of such lands, reserved or classified as power sites, will not be injured nor destroyed for the purpose of power development by location, entry or selection under the public land laws, the Secretary of the Interior shall declare such lands open to location, entry or selection subject to certain conditions.[11]

§ 6. Reclamation Projects.

The act of June 17, 1902,[12] known as the Reclamation Act, provides for two forms of withdrawal. The first form of withdrawal is of lands required for the construction of irrigation works.[13] This is an absolute withdrawal from any kind of entry or mineral location.[14] The second form of withdrawal is of lands under said works and subject to irrigation, which may be entered only under the Homestead laws.[15]

§ 7. Mineral Lands Withdrawn.

There is no doubt that lands containing mineral deposits may be withdrawn and reserved from disposal or exploration. It has been so held as to National Monuments,[16] military and Indian reserves,[17] but it is also held in that connection that valid mining locations made prior to such withdrawal are not defeated by such reservation so long as the

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all others. 33 Op. A. G. 34. It is evident, however, that congress did not intend that the inclusion of lands in a proposed project or any power site withdrawal or reserve should not be subject to the provisions of the Leasing Act. Oil Prospecting Permits in Power Site Reserves, 48 L. D. 459. See Dailey Clay Co., *supra.*[(1)]

The proviso to § 24 which authorizes the approving or patenting, subject to limitations and conditions of the act, or locations, entries, selections, or filings theretofore made for lands reserved as water power sites, has reference only to such locations, entries, selections, or filings as were made prior to the passage of the act. Wilcox, 48 L. D. 184. The act does not contemplate that reserved lands shall be subject to suspended filings or applications while so reserved. Therefore, as to any public lands covered by the application which are so reserved the application is ineffective and will not be entertained. Walker River District, 48 L. D. 197.

[11] An oil and gas prospecting permit or a lease thereon, granted pursuant to the Leasing Act does not constitute an "entry," "location" or other "disposal" of the land included therein, within the meaning of those terms as contemplated by § 24 of the Water Power Act of June 10, 1920. The authority conferred upon the Federal Power Commission by subdivision *h* of § 4 of that act to make rules and regulations not inconsistent with the purposes of the act as may be necessary and proper for the purpose of carrying out its provisions, does not clothe that commission with jurisdiction to require the insertion of restrictions in oil and gas permits and leases consequent thereon pursuant to the Leasing Act, for lands in power site withdrawals and reserves for power purposes. Oil Prospecting Permits in Power Site Reserves, 48 L. D. 459, 628.

[12] 5 U. S. Comp. St. p. 5763, § 4702, *et seq.*

[13] U. S. vs. Hanson, 167 Fed. 881; U. S. vs. Fall, 276 Fed. 623; Crafts, 36 L. D. 138; see Instructions, 33 L. D. 607, 38 L. D. 629; Loney vs. Scott, 57 Or. 466, 112 Pac. 172.

[14] See 1 Fed. St. Anno. 414; U. S. vs. Minidoka Co., 190 Fed. 491; Bisbing, 13 L. D. 45; Gabathuler, 15 L. D. 488; Austin, 18 L. D. 4. Lands withdrawn for a reservoir site or similar reclamation purposes which are essential to the project, and lands acquired by purchase or condemnation for the exclusive use of the project, may be developed for their mineral resources only by temporary leases for periods not inconsistent with the needs of the project. Mell, 50 L. D. 308; see, also, Wolfe, 49 L. D. 625, and Clyde vs. Cummings, 35 Utah 461, 101 Pac. 106.

[15] See *supra*, note 13; Bowen vs. Hickey, 53 Cal. A. 256, 200 Pac. 46.

[16] Cameron vs. U. S., 252 U. S. 450, affirming 250 Fed. 943; see Grand Canyon Co. vs. Cameron, 36 L. D. 66. A national monument may be created within the limits of a forest reserve; but, in so far as they both embrace the same land, the monument reserve becomes the dominant reserve. Cameron vs. U. S., *supra.*

[17] Fort Maginnis, 1 L. D. 552; Kinney, 44 L. D. 580; Interstate Oil Corp., *supra*[(1)]; see, also, Grisar vs. McDowell, 6 Wall. 383. Mineral lands within an abandoned military reservation are subject to the mineral laws. See Randolph, 23 L. D. 517. After an Indian reservation has been withdrawn mining locations may be made within its former boundaries. See Collins vs. Bubb, 73 Fed. 735; see, also, Kendall vs. San Juan Co., 9 Colo. 349, 12 Pac. 198, affirmed in 144 U. S. 658.

mineral claimant continues to comply with the law.[18] In other words, a mining location founded on actual discovery of a valuable mineral deposit within the limits of the claim, and maintained in accordance with the mining law and the local regulations applicable thereto, excepts the land covered thereby from the operation of a withdrawal under said act.[19]

§ 8. Default in Assessment Work.

A mining claim as to which the claimant was in default in the performance of the required annual assessment work at the date of a withdrawal for the construction of irrigation works under said act does not except the land from the force and effect of the withdrawal.[20]

§ 9. Jurisdiction of Land Department.

The Land Department holds that it has jurisdiction to determine whether the mining claimant has failed to do the annual assessment work and to declare by its judgment whether the possessory right to a location has been divested so as to restore the land to the government.[21]

PART IV.

SURFACE ACTS.

§ 1. Introductory.
§ 2. "The Surface Act."
§ 3. Reservation to United States.
§ 4. Prospecting Reserved Deposits.
§ 5. Use of Surface by Miner.
§ 6. Prompt Consideration of Applications.
§ 7. Proving Nonmineral Character.
§ 8. Restricted Patents.
§ 9. Jurisdiction of Courts.
§ 10. Jurisdiction of Land Department.
§ 11. Stock-Raising Homestead Act.
§ 12. Mineral Rights Reserved.
§ 13. Relative Rights of Miner and Agriculturist.
§ 14. Character of Land.
§ 15. Timber and Stone Act.
§ 16. Determination of Character of Land.
§ 17. Oil and Gas Lands.
§ 18. Indian Lands.

§ 1. Introductory.

The severance of surface from subsurface rights in land, which an individual proprietor, in its disposal may make as he will, has been authorized by several acts of congress relative to the disposal by the United States of its public domain, among which may be mentioned the act of July 17, 1914, which permitted agricultural entry of the surface rights in withdrawn oil, gas, and other specified mineral lands, and the Leasing Act, which provided for disposal by lease of the subsurface rights separately from the surface ownership, in lands containing certain specified minerals.[1]

§ 2. The Surface Act.

The act of July 17, 1914,[2] called "The Surface Act," did not suspend nor work a repeal of the provisions of the mining laws where such laws could otherwise operate, nor did the act itself effect such a repeal, and no such purpose nor intent can properly be gathered from the language

[18] See preceding note; see, also, Caledonia Co. vs. Noonan, 3 Dak. 189, 14 N. W. 426, affirmed in 121 U. S. 393.

[19] Instructions, 32 L. D. 387.

[20] See note 17, *supra*.

[21] Wyoming, 38 L. D. 508. Disputes between rival claimants relating to the fulfillment by mining locators, or their successors in interest, of the legal requirements as to performance of annual assessment work are not, generally, matters for departmental determination, but come exclusively within the jurisdiction of the courts. Corbett, 50 L. D. 291; see, also, Cameron vs. U. S., *supra*.[16]

[1] Emerald Oil Co., 48 L. D. 243.

[2] 5 U. S. Comp. St. p. 5683, § 4640*a*.

used. After the passage of this statute, oil, gas or asphaltic minerals (and the other minerals mentioned therein), in the public domain, in areas not covered by Executive withdrawals or reservations, were subject to exploitation and location under the same conditions and with the same facility as theretofore. The specific repeal of the mining laws, as to the mineral deposits mentioned, was accomplished by the Leasing Act. That act, however, expressly provides that valid claims existent at the passage thereof and thereafter maintained in compliance with the laws under which initiated, might be perfected under such laws, even including discovery, under the last-mentioned act.[3] These two acts are not in conflict but are the complement of each other.[4]

§ 3. Reservation to United States.

This act provides that the surface lands withdrawn or classified as oil, gas, or asphaltic minerals or which are valuable for those deposits are

[3] Pollock, 48 L. D. 5.

[4] Marathon Oil Co. vs. West, U. S. Intervenor, 48 L. D. 150; Foster vs. Hess, 50 L. D. 276.

In the case of Foster vs. Hess the claim was made that an entryman of lands not withdrawn, classified nor reported as valuable for oil and gas deposits at the time of entry, can only be required to consent to a reservation of such deposits when it is shown, prior to final entry, that the lands contain valuable deposits of oil or gas. In other words, the actual demonstrated existence of minerals is essential; and a reasonable belief that such deposits will be found, based upon geologic indications which would warrant expenditures in prospecting operations, is not sufficient. In the course of the decision it was said: "Analysis of the Acts of July 17, 1914, and February 25, 1920 (the Leasing Act), discloses the fallacy of this claim.

"The act of July 17, 1914 (38 Stat. 509), provided a means whereby surface entries could be made and perfected upon lands 'valuable for' deposits of nitrate, potash, oil, gas or asphaltic minerals; and authorized the issuance of patents to these surface entrymen, which patents should contain a reservation of the particular deposits for which the land was valuable, and reserved to the United States, its lessees or licensees, certain rights in respect to said deposits. It can not be doubted that this act was intended to permit the joint use of mineral lands; and that such rights were reserved from the surface patents as would permit the government, or those in privity with it, to fully exploit and develop the reserved deposits which gave the land value as mineral land.

"Consideration of the rights reserved, therefore, must indicate what the Congress wished to withhold from the surface entrymen and to conserve.

"In each of the three sections of the act of July 17, 1914, the rights reserved are '*to prospect for*, mine and remove' the reserved deposits (italics supplied). Lands which, from geologic indications warrant *prospecting* operations to establish the actual existence of deposits of the minerals specified in the act of July 17, 1914, *supra*, are clearly therefore, to be considered as 'valuable for' such deposits within the meaning of said act; and a report as to such prospective value is a proper basis for a requirement that an entryman of lands having such prospective value consent to a reservation of the particular deposits, in accordance with said act. State of Utah vs. Litchliter et al. (50 L. D. 231). * * * A second reason for the lack of merit in the foregoing claim appears when the result of said claim, if allowed, is considered. Under that view, only such lands as have been prospected before final entry could be properly classified as mineral. In all other cases, the entryman, by completing final proof, could force the hand of the government and acquire unrestricted title to lands which, from their situation and from their geologic formation strongly suggested the presence of minerals, but which, for some reason not related to the character of the land (such as economic conditions retarding prospecting generally, or especial conditions of isolation, or similar difficulties), had not been prospected and the minerals discovered. The privilege given entrymen in § 2 of the act of July 17, 1914, of proving, before final entry, that the lands 'are in fact nonmineral in character' clearly indicates a contrary intent of the Congress. Any doubt which may have existed on this point prior to the passage of the Leasing Act of February 25, 1920, *supra*, which act is a complement of the act of July 17, 1914, *supra* (Marathon Oil Co. vs. West, U. S., intervener, 48 L. D. 150), was dispelled by the provisions of the said Leasing Act. Under § 13 of that act, permits to prospect for oil and gas are authorized as to deposits of said minerals owned by the United States; and in § 20 of said act, surface entrymen of said lands so entered before the lands were withdrawn or classified as mineral, who were thereafter required to consent to accept a restricted or surface patent with the minerals reserved to the United States, are given a preference right to a permit *to prospect for* oil or gas. When the actual existence of deposits of these minerals are established the entryman is entitled to a lease. No clearer evidence that lands prospectively valuable for oil and gas were intended to be patented under the nonmineral laws only with a reservation of such deposits can well be desired." See, also, California, Robinson, Transferee, 48 L. D. 387; Pace vs. Carstarphen, 50 L. D. 369.

subject to appropriation, location, selection, entry, or purchase, if otherwise available, under the nonmineral laws whenever made with a view of obtaining or passing title with a reservation to the United States of the deposits on account of which the lands were withdrawn or classified or reported as valuable, together with the right to prospect for, mine and remove the same.[5] Such deposits to be subject to disposal by the government only as shall be expressly directed by law.[6]

§ 4. Prospecting Reserved Deposits.

Any person qualified to acquire the reserved deposits may enter upon said lands with a view of prospecting for the same upon the approval by the Secretary of the Interior of a bond or undertaking to be filed with him as security for the payment of all damages to the crops and improvements on such lands by reason of such prospecting, the measure of any such damage to be fixed by agreement of parties or by a court of competent jurisdiction.[7]

§ 5. Use of Surface by Miner.

Any person who has acquired from the United States the title or the right to mine and remove the reserved deposits, should the United States dispose of the mineral deposits in lands, may reenter and occupy so much of the surface thereof as may be required for all purposes reasonably incident to the mining and removal of the minerals therefrom, and mine and remove such minerals, upon payment of damages caused thereby to the owner of the land, or upon giving a good and sufficient bond or undertaking therefor in an action instituted in any competent court to ascertain and fix said damages.[8]

§ 6. Prompt Consideration of Applications.

Nothing contained in the act shall be held to deny or abridge the right to present and have prompt consideration of applications to locate, select, enter, or purchase, under the land laws of the United States, lands which have been withdrawn or classified as oil gas, or asphaltic mineral lands, with a view of disproving such classification and securing a patent without reservation.[9]

§ 7. Proving Nonmineral Character.

Persons who have located, selected, entered, or purchased lands subsequently withdrawn, or classified as valuable for said mineral deposits, shall not be debarred from the privilege of showing at any time before final entry, purchase, or approval of selection or location, that the lands entered, selected, or located are in fact nonmineral in character.[10]

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[5] 5 U. S. Comp. St. p. 5683, § 4640*a*. Where land within a homestead entry upon which final proof has been submitted, but suspended to await the fulfillment of some further requirement, is discovered to be within the limits of a producing oil field prior to the completion of the proof, the entryman must consent to a reservation of the oil and gas content as prescribed by the act of July 17, 1914, or assume the burden of showing the nonmineral character of the land. La Flame, 49 L. D. 224; see Washburn vs. Lane, 258 Fed. 524; Son vs. Adamson, *supra*.[(2)]; Midland Oil Fields Co. vs. Rudneck, *supra*.[(2)]

[6] 5 U. S. Comp. St. p. 5683, § 4640*b*.

[7] Id. See note 60, *infra*.

[8] Id.

[9] 5 U. S. Comp. St. p. 5683, § 4640*b*.

[10] 5 U. S. Comp. St. p. 5684, § 4640*b*.

Before issuance of patent the Secretary of the Interior may institute an inquiry upon his own motion, to ascertain whether there was fraud in the entry, and this authority extends to his subordinate, the Commissioner of the General Land Office. Orchard vs. Alexander, 157 U. S. 372; Love vs. Flahive, 205 U. S. 195; Jones vs. Hoover, 144 Fed. 221.

§ 8. Restricted Patents.

Any person who has, in good faith, located, selected, entered, or purchased, or any person who shall hereafter locate, select, enter or purchase, under the nonmineral laws of the United States, any lands which are subsequently withdrawn, classified or reported as being valuable for oil gas, or asphaltic minerals, may, upon application therefor, and making satisfactory proof of compliance with the laws under which such lands are claimed, receive a patent therefor, which patent shall contain a reservation to the United States of all deposits on account of which the lands were withdrawn, classified, or reported as being valuable, together with the right to prospect for, mine, and remove the same.[11]

§ 9. Jurisdiction of Courts.

The courts, not the Land Department, have direct jurisdiction to determine questions pertaining to actual physical possession of lands in cases arising from conflicts between claimants under the acts of July 17, 1914, and February 25, 1920, respectively.[12]

§ 10. Jurisdiction of Land Department.

The determination of the character of the public lands is committed exclusively to the Land Department, and in exercising that jurisdiction it may select its own instrumentalities and methods. A recommendation of its Geological Survey that specified public lands be withdrawn from entry (nonmineral or other) and placed in a petroleum reserve, if approved by the Department head and acted upon favorably by the Executive, is one mode of classification of those lands as mineral in character; provisional, it is true, and subject to revocation upon further investigation or upon showing by a nonmineral claimant, but until then, presumptively fixing their mineral character. In Washburn vs. Lane (*supra*,[14]) it was held that inclusion in a petroleum reserve was a *prima facie* mineral classification, prevailing against a lieu selection of the land as nonmineral, previously initiated but not completed.[13]

One who purchases of any entryman before the issuance of patent obtains no greater right or estate than is possessed by the entryman, and acquires at the most a right or equitable estate which is subject to examination within the Land Department while the title remains in the government. Hawley vs. Diller, 178 U. S. 488; Thayer vs. Spratt, 189 U. S. 352.

[11] 5 U. S. Comp. St. p. 5684, § 4640*c*; U. S. vs. Ridgely, 262 Fed. 675; Stockley vs. U. S., *supra*.[3] Consent to accept a restricted patent in accordance with the act of July 17, 1914, for oil and gas lands, may be filed by a mortgagee, if the homestead entryman, after proper notification, fails to do so. Otherwise the relief to which the former is entitled, would be wholly defeated. Gordon and Overly Co., 50 L. D. 240.

[12] Marathon Oil Co. vs. West, U. S. Intervener, *supra*.[4]

[13] Mabry (on rehearing), 48 L. D. 280; see, also, Lane vs. Cameron, 45 App. Cas. (D. C.) 409. See, generally, Cameron vs. U. S., 252 U. S. 450; Burke vs. S. P. R. R. Co., 234 U. S. 670; Vore vs. Ephraim, 173 Cal. 245, 159 Pac. 719.

The rules of law as administered by courts are binding upon the Land Department only in so far as they are not adverse to but assist its function as an administrative branch of the executive department of the government which, as the proprietor of the public domain, as a party to all proceedings looking to the disposal of any part of that domain, and in its executive administration is entitled to rely upon and adhere to the classification of its lands, once arrived at, even though between others than the parties to a new application to enter. This principle of the paramount nature of the administrative side of the Land Department's work, rather than its function of adjudicating the rights of private claimants, entitles it, in so adjudicating, to respect and follow its own former adjudications as to particular lands, even though not binding in strictness upon a new claimant. Its executive liberty of action in this respect is quite analagous to the executive power, existing through implication of withdrawal of lands from entry notwithstanding congressional legislation had previously made them free and open to occupation and purchase, which is fully discussed in U. S. vs. Midwest Oil Co., *supra*.[3] Day, 50 L. D. 23. The practice of withdrawing lands contemplates their segregation for purposes of investigation and the Land Department holds that it is clearly its duty to seek such withdrawals

§ 11. Stock-raising Homestead Act.

The act of December 29, 1916,[14] called the "Stock-Raising Homestead Act" provides that the Secretary of the Interior may designate unappropriated, unreserved public lands as "stock-raising lands," where the surface thereof is, in his opinion, chiefly valuable for grazing and raising forage crops, provided they do not contain merchantable timber, are not susceptible of irrigation from any known source of water supply, are of such character that 640 acres are reasonably required for the support of a family, and contain no water holes nor other bodies of water needed or used by the public for watering purposes.

Where lands are thus designated, any person qualified to make entry under the homestead laws may make a homestead entry for not exceeding 640 acres thereof, and the fact that the tract sought may be valuable for coal or other minerals is not material, since all minerals are reserved to the United States.

§ 12. Mineral Rights Reserved.

All coal and other mineral rights are reserved to the United States, together with the right to prospect for, mine, remove and dispose of the same.[15]

§ 13. Relative Rights of Miner and Agriculturist.

Under the provisions of this law the homesteader does not obtain a title to the fee. His rights are confined to the surface or so much thereof as may not ultimately be set apart for the conduct of mining operations, which, by its terms, do not seem to be limited to the underlying minerals. The miner, under the restrictions shown in note 15 *supra*, may enter

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whenever from evidence before it an inference or belief is warranted that lands in fact are mineral. Utah vs. Lichliter, *supra*.[10]

[14] 39 Stat. 862; amended 40 Stat. 1016; amended 41 Stat. 287. See Instructions, 48 L. D. 485. This act modifies the placer mining laws so as to authorize the issuance of surface patents for lands of the character contemplated by this act and duly entered thereunder, and authorized the patenting of the reserved deposits to mineral applicants under the placer mining laws. Dean vs. Lusk Royalty Co., 50 L. D. 193.

[15] Id. Any person qualified to locate and enter the coal or other mineral deposits, or having the right to mine and remove the same under the laws of the United States, shall have the right at all times to enter upon the lands entered or patented, as provided by this act, for the purpose of prospecting for coal or other mineral therein, provided he shall not injure, damage, or destroy the permanent improvements of the entryman or patentee, and shall be liable to and shall compensate the entryman or patentee for all damages to the crops on such lands by reason of such prospecting. Any person who has acquired from the United States the coal or other mineral deposits in any such land, or the right to mine and remove the same, may reenter and occupy so much of the surface thereof as may be required for all purposes reasonably incident to the mining or removal of the coal or other minerals, first, upon securing the written consent or waiver of the homestead entryman or patentee; second, upon payment of the damages to crops or other tangible improvements to the owner thereof; where agreement may be had as to the amount thereof; or third, in lieu of either of the foregoing provisions, upon the execution of a good and sufficient bond or undertaking to the United States for the use and benefit of the entryman or owner of the land, to secure the payment of such damages to the crops or tangible improvements of the entryman or owner, as may be determined and fixed in an action brought upon the bond or undertaking in a court of competent jurisdiction against the principal and sureties thereon, such bond or undertaking to be in form and in accordance with rules and regulations prescribed by the Secretary of the Interior and to be filed with and approved by the register and receiver of the local land office of the district wherein the land is situate, subject to appeal to the Commissioner of the General Land Office: *Provided*, That all patents issued for the coal or other mineral deposits herein reserved shall contain appropriate notations declaring them to be subject to the provisions of this act with reference to the disposition, occupancy, and use of the land as permitted to an entryman under this act. Id.

The filing of an application to make entry of lands subject to entry under this act confers upon the applicant a prior right to the surface that is not subject to contest by a mineral claimant who bases his right upon discovery made after the filing of the homestead application. Rosetti vs. Dougherty, 50 L. D. 16. See note 60, *infra*.

upon, prospect and mine the land, thus practically conducting the usual mining operations thereon with the same facility as before the enactment of this statute as it does not repeal the mining law.[16]

§ 14. Character of Land.

When an issue is raised between rival applicants, either of them is entitled to a hearing for the purpose of showing that his adversary secured the designation necessary to his entry by making a false or fraudulent representation as to the character of the land.[17]

§ 15. Timber and Stone Act.

This act [18] allows entries thereunder under the act of July 17, 1914,[19] for lands withdrawn or classified as valuable for (among other minerals) oil gas, or asphaltic minerals, or which are valuable for those deposits, provided the applicant files his consent, to have the entry stand subject to the provisions and limitations of said act.[20]

§ 16. Determination of Character of Land.

Lands within the known geologic structures of producing oil or gas fields, or embraced in applications for oil and prospecting permits, or in permits or leases granted, are not subject to entry hereunder until and unless the Secretary of the Interior shall determine that the surface of the lands may be disposed of without detriment to the public interest.[21]

§ 17. Oil and Gas Lands.

A complete equitable title becomes vested upon the claimant's full compliance with the law and the final certificate upon a timber and stone entry is *prima facie* evidence of that title. Thereafter such entryman can not be compelled to accept a limited patent pursuant to the act of July 17, 1914, because of a subsequent report that the land is valuable for oil or gas, unless the government makes the charge and shows upon assumption of the burden of proof that the land was of known mineral character at the date of the perfection of the claim.[22]

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[16] In Barker vs. Mintz, 73 Colo. 262, 215 Pac. 534, it is said: "The land is wild, and its present value, except for coal, is only for pasturage; a very little of it for cultivation. The stripping destroys these values, but the fair and equitable way is so to treat the matter that each party shall get the greatest amount of good with the least possible harm, and that is by allowing the defendant to take out his coal and pay the plaintiff for the damages he thereby does to her estate. He then will get the full value of his property and she will get the full value of hers. Is that not equity?"

[17] Stokes & Eckert, 48 L. D. 105.

[18] 5 U. S. Comp. St. p. 5726, § 4671. For entry of building stone lands under the provisions of the law in relation to placer mineral claims see 5 U. S. Comp. St. p. 5678, § 4633. One who has made entry for the full area permitted by the Stock-Raising Homestead Act is thereafter debarred from making a timber and stone entry, or any other form of entry under the agricultural land laws. Feltner, 49 L. D. 527.

[19] 5 U. S. Comp. St. p. 5683, § 4640*a*.

[20] See Regulations, 49 L. D. 288.

[21] Id.

[22] Chamberlain, 48 L. D. 411. A report by a field agent, after the issuance of a final certificate upon such an entry, charging that the land contains oil and gas and was so known at the date of final proof, may be used as a basis for government proceedings against the claim, but it is not competent evidence upon which final action adverse to the claimant may be taken, without charges, notice and an opportunity for a hearing. See Goodwin, 43 L. D. 484, Ireland, 40 L. D. 484.

The difference between a receiver's receipt and a register's final certificate of entry is that the former, as its name imports, acknowledges the receipt of the money paid. The other certifies to the payment and declares that the claimant on presentation of the certificate to the Commissioner of the General Land Office shall be entitled to a patent. Stockley vs. U. S., *supra*.[(2)]

§ 18. Indian Lands.

The Leasing Act did not, expressly nor by implication, repeal nor modify those provisions of the act of February 28, 1891,[23] which relate to the leasing by allottees of lands within Indian reservations.[24]

PART V.

FEDERAL PERMITS AND LEASES.

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§ 81. Act of March 4, 1923—Oklahoma.
§ 82. Trespass.
§ 83. Recorded Notice Ineffective.
§ 84. Annual Assessment Work Within Withdrawn Areas.

[23] 26 Stat. 794. The provisions of this act relating to the leasing by allottees of lands within Indian reservations, were applicable only to such reservations as those created by treaty or congressional action, and prior to the enactment of the Leasing Act no authority existed for the leasing of lands withdrawn from the public domain by Executive order for the use of the Indians. Lands withdrawn from the public domain by Executive order for the use of the Indians are lands "owned by the United States" within the purview of that term as used in the Leasing Act and may be included within an oil and gas prospecting permit under § 13 thereof. Harrison, 49 L. D. 139. For additional requirements to be demanded of permittees and lessees deemed necessary for the protection of the Indians. See Instructions, 50 L. D. 238.

[24] Harrison, *supra*.[23]

§ 1. Introductory.

Lands chiefly valuable for petroleum or other mineral oils[1] or a deposit of natural gas[2] could be located as placer mining claims unless within the boundaries of lands reserved by congress for a public purpose, as, for instance, Indian reservations, military reservations, national parks and reservoir sites or until such mineral lands were included within areas temporarily withdrawn by executive order[3] previous to or under the terms of the act of June 25, 1910,[4] and permanently withdrawn from location and entry under the provisions of the act of February 25, 1920.[5] Under the terms of the act of July 17, 1914, and the Stock-Raising Homestead Act[6] the miner is given the right to prospect for, mine and remove the minerals in the land and to occupy so much of the surface as may be required for all purposes reasonably incident to such operations after securing the consent or waiver of the owner of the surface or paying all damages to crops or other tangible improvements to the owner thereof or in lieu thereof giving bond to the United States for the use and benefit of the entryman or owner of the land to secure payment of such damages to the crops, etc.

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[1] 29 Stat. 526; Chrisman vs. Miller, 197 U. S. 313; Weed vs. Snook, 144 Cal. 440, 77 Pac. 1023; McLemore vs. Express Co., 158 Cal. 559, 112 Pac. 59; Bay vs. Oklahoma Co., 13 Okla. 425, 73 Pac. 936.

[2] New England Co. vs. Congdon, 152 Cal. 211, 92 Pac. 180; Whiting vs. Straup, 17 Wyo. 19, 95 Pac. 849.

[3] In U. S. vs. Midwest Oil Co., 236 U. S. 459, the authority of the President to withdraw oil lands from location and patent was upheld. See, also, Mason vs. U. S., 260 U. S. 545; U. S. vs. Midway Northern Oil Co., 232 Fed. 627. For an instance of wrongful entry upon lands embraced within a withdrawal order, see El Dorado Co. vs. U. S. 229 Fed. 949; see, also, U. S. vs. Dominion Oil Co., 241 Fed. 426. For cases involving the issuing of an injunction and the appointment of a receiver to prevent the extraction and waste of oil on withdrawn lands, see U. S. vs. McCutchen, 234 Fed. 712; U. S. vs. Honolulu Con. Oil Co., 249 Fed. 168. A petroleum withdrawal impresses the land with a *prima facie* mineral character. Baxter, 48 L. D. 126.

[4] 5 U. S. Comp. St. p. 5320, § 4523, amended 5 U. S. Comp. St. p. 5321, § 4524, so as to include all nonmetalliferous deposits. This legislation is known as the Pickett Act. It is a remedial statute. It was intended to protect *bona fide* occupants of public oil or gas lands who in good faith were at the time of the withdrawal engaged in work leading to discovery by giving them the right to continue their work to a discovery and thereafter to extract and market the oil and to acquire title notwithstanding the withdrawal. U. S. vs. Rock Oil Co., 257 Fed. 333; see Con. Mutual Oil Co. vs. U. S., 245 Fed. 521; U. S. vs. McCutchen, *supra.*[(3)] For an instance of what are sufficient to constitute an occupation, possession and due diligence within the provisions of the Pickett Act, see U. S. vs. Grass Creek Co., 236 Fed. 485, and see Oregon Basin Co., 50 L. D. 244. *Compare* El Dorado Co. vs. U. S., *supra*[(3)]; see, also, U. S. vs. Ohio Oil Co., 240 Fed. 1005; U. S. vs. Stockton Midway Oil Co., 240 Fed. 1009. The government by its mining statutes offers to qualified persons the minerals in the public domain through the means of mining locations, and if the offer so made is accepted by compliance and by the location of a valid mining claim in accordance with the statutory provisions before the offer is withdrawn by the government, it can not, after acceptance, withdraw its order, as the offer then becomes binding and an enforceable obligation. But the government may withdraw its offer at any time before acceptance and the situation stands as if no offer had ever been made. In other words, in the absence of a discovery on an oil (or any other mineral) location on the public domain and in the absence on the part of the locator of diligent prosecution of work leading to discovery, even though in actual possession of the claim, as against the government, he is subject at any time to the possibility of a withdrawal of the privileges offered to him and consequently a termination of his rights. U. S. vs. McCutchen, *supra.*[(3)]

[5] 2 Supp. U. S. Comp. St. p. 1409, § 4640¾*ff* (§ 13). The passage of the Leasing Act of February 25, 1920, was the enactment into law of a broad comprehensive plan of general application by which an entire new system respecting the disposition of lands and the deposits of minerals beneath the surface owned by the United States and valuable for certain specified minerals was adopted. The purpose of this act was to encourage the development of the mineral resources of the country under the principle of permits for exploration and the leasing of the lands owned by the United States. It will be noted that under the terms of said act, all lands owned by the United States were included within its provisions except as to certain lands therein specifically enumerated. Harrison, 49 L. D. 139.

[6] 5 U. S. Comp. St. p. 5683, § 4640*a*. Act of December 29, 1916 (39 Stat. 862), amended by the act of October 25, 1918. (40 Stat. 1016) and the act of September 29, 1919 (41 Stat. 287). The former act modified the placer mining laws so as to

§ 2. Lands Subject to Disposition Under the Act.

Under the provision of the act of February 25, 1920[7] (commonly called "The Leasing Act"), oil, oil shale, gas (and other minerals) on the public domain owned by the United States, including those in national forests, but excluding lands acquired under the act known as the Appalachian Forest Act, approved March 1, 1911[8], and those in national parks, and in lands withdrawn or reserved for military or naval uses or purposes, except as therein provided, shall be subject to disposition in the manner and form provided by that act to citizens of the United States, or to any association of such persons, or to any corporation organized under the laws of the United States, or of any state or territory thereof, and in the case of oil, oil shale, or gas to municipalities.

§ 3. Helium Reserved.

The United States reserves the right to extract helium from all gas from lands permitted, leased, or otherwise, granted under the provisions of the act, under such rules and regulations as shall be prescribed by the Secretary of the Interior.[9]

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authorize the issuance of surface patents for lands of the character contemplated by the Stock-Raising Act and duly entered thereunder, and authorized the patenting of the reserved deposits to mineral claimants under the placer mining laws. This intent clearly appears from the following provision in section 9 of that act: "*Provided*, that all patents issued for the coal or other mineral deposits herein reserved shall contain appropriate notations declaring them to be subject to the provisions of this act with reference to the disposition, occupancy and use of the land as permitted to an entryman under this act." Dean vs. Lusk Royalty Co., 50 L. D. 192. See Stock-Raising Homesteads, 48 L. D. 485.

A stock-raising homestead entryman does not have a sufficient interest in the reserved mineral deposits in the lands within his entry to entitle him to protest against the issuance of an oil and gas prospecting permit, except it be in his capacity as a citizen desiring to prevent the perpetration of a fraud upon the government. Dean vs. Lusk Royalty Co., *supra*.

The provisions of the Surface Act of July 17, 1914, and those contained in the Leasing Act are not in conflict, but are the complement of each other. From the homestead entries mineral rights and all incidents essential thereto are reserved, while in the lease and permit that may be issued to the mining claimant the rights pertaining to the estate of the surface claimant must be duly respected and protected. Any question that may arise as to actual possession of any portion of the area, or any possible difficulties between these two claimants, are matters over which the Land Department has no direct jurisdiction. Those matters must be investigated and adjudicated in the local tribunals having jurisdiction over the parties. Marathon Oil Co. vs. West, U. S. Intervener, 48 L. D. 150. Cleveland vs. Johnson (on rehearing), 48 L. D. 18, involved the construction of said act.

An application for an oil and gas permit embracing lands within a homestead entry, filed by the entryman during the pendency of action by the Land Department upon the question of allowance of his final proof, constitutes an admission that the land has a prospective oil and gas value and amounts to an election to take a restricted patent in accordance with the provisions of the act of July 17, 1914. Heirs of Corder, 50 L. D. 185.

A permittee under an oil and gas prospecting permit is not authorized to injure the permanent improvements of a stock-raising homestead entryman, and damage to crops must be compensated for as provided by section 9 of the act of December 26, 1916. Dean vs. Lusk Royalty Co., *supra*. See note 60, *infra*.

[7] 2 Supp. U. S. Comp. St. p. 1404, § 4640¼. This act supersedes the provisions of the mining laws in so far as the minerals named therein are concerned and it makes specific provision for various classes of preference rights. Amerman vs. Mackenzie, 48 L. D. 580.

[8] Stat. 1911, p. 961. Ownership by the government of lands abutting upon a meandered nonnavigable body of water carries with it the same rights with respect to submerged land opposite thereto that private ownership does, and such rights pass by permit or lease of the government-owned uplands as well as by patent to such lands. A prospecting permit or permit application, therefore, covering land abutting a meandered nonnavigable body of water embraces the adjacent submerged area, as well as the upland. Lands beneath the waters of a nonnavigable lake which is surrounded by tracts that have been patented by the government or are embraced within existing claims or pending applications are not subject apart from the abutting uplands to the oil prospecting permit or lease provisions of the Leasing Act. Phebus, 48 L. D. 128.

[9] 2 Supp. U. S. Comp. St. p. 1404, § 4640¼.

§ 4. No Substantial Delay.

In the extraction of helium from gas produced from such lands, it shall be so extracted as to cause no substantial delay in the delivery of gas produced from the well to the purchaser thereof.[10]

§ 5. Persons Excepted.

Citizens of another country, the laws, customs or regulations of which deny similar or like privileges to citizens or corporations of this country, shall not by stock holding, or stock control, own any interest in any lease acquired under the provisions of this act.[11]

§ 6. Prospecting Permit for Oil or Gas.

Under the terms of the act and the rules and regulations prescribed by the Secretary of the Interior a qualified applicant may be granted the exclusive right, for a period not exceeding two years to prospect for oil or gas upon not to exceed two thousand five hundred and sixty acres of land wherein such deposits belong to the United States and are not within any known geological structure of a producing oil or gas field upon condition that the permittee shall begin drilling operations within six months from the date of the permit, drill one or more wells for oil or gas to a depth of not less than five hundred feet each, unless valuable deposits of oil or gas shall be sooner discovered, and shall, within two years from date of the permit, drill for oil or gas to an aggregate depth of not less than two thousand feet unless valuable deposits of oil or gas shall be sooner discovered.[12]

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[10] Id.

[11] Id. While an oil and gas prospecting permit can not be issued under the act to an alien, yet there is nothing in the law nor the practice of the Land Department that forbids the issuance thereof to a citizen who is naturalized after the filing of the application but before the granting of the permit. O'Rourke, 48 L. D. 215; see, also, Manuel vs. Wulff, 152 U. S. 505. The same rule has uniformly been followed by the Land Department in homestead cases. See Lerow vs. Grant, 32 L. D. 403, and cases there cited. Upon the granting of an oil prospecting permit rights thereunder attach as of the date of the application. Brennan, 48 L. D. 108. See, also, Lee, 49 L. D. 175.

[12] 2 Supp. U. S. Comp. St. p. 1409, § 4640¼*ff* (§ 13). It always is possible that when a structure must be defined long before it is completely drilled up, it may include territory that will later prove to be nonproductive and may exclude land that later is proved to be productive, because no accurate prediction can be made as to the distance down the flanks of the fold to which the oil or gas will extend. Hopkins, 50 L. D. 213. Land that is not within a designated oil or gas structure nevertheless is to be treated as valuable for oil and gas when embraced within a prospecting permit. Brennan, *supra*.[11] Where qualified persons have filed proper applications for oil or gas permits they can not be deprived of their rights because of a delay in action upon the application so filed due to there intervening a designation by the Land Department of the lands being within the geological structure of a producing oil or gas field occasioned by a discovery of oil or gas subsequent to the filing of the application in the local land office. Oil Prospecting Permit, 48 L. D. 98. *Compare* Mason (on petition), 48 L. D. 213, in which case the Land Department said: "With respect to the particular lands here in question, the Director of the Geological Survey reports that the said lands formed a part of the known geological structure of the Elk Hills field for some years prior to the passage of the Leasing Act, and, therefore, before any rights could be initiated under that act. It is clear, therefore, that notwithstanding the fact that the land may not have been designated by the Director of the Geological Survey as within the known geological structure of a producing oil and gas field until after the application of Mason was filed, the land was not subject to permit under section 13 of the act for the reason that as a matter of fact it was at the time of the filing of Mason's application known to be within such a geological structure." Once a structure is pronounced as producing, and this definition is acquiesced in by the persons whose applications preceded its definition, but were made after the discovery prompting it, they may not thereafter, by filing applications for reinstatement alleging later developments, revive their former applications, but must, in order to receive permits, file the first proper application after the lands are restored from the defined structure, which was, in effect, a withdrawal from appropriation under section 13. Hopkins, *supra*.

The denial of an application for oil and gas prospecting permit is a proper exercise of the discretionary authority conferred upon the Secretary of the Interior, if the

§ 6a. Extension of Time.

If it appears that the permittee has been unable with the exercise of diligence, to begin drilling operations or to drill wells of the depth and within the time aforesaid, the Secretary of the Interior may extend the time for beginning such drilling or completing it, to the amount specified in the act for such time, not exceeding three years, and upon such conditions as he shall prescribe.[13]

§ 7. Preliminary Demarcation.

Whether the lands sought in any such application and permit are surveyed or unsurveyed the applicant shall, prior to filing his application for permit, locate such lands in a reasonably compact form and according to the legal subdivisions of the public land surveys if the

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lands to be prospected were at the time of the filing of the application within a known geological structure, although not designated as such until subsequently thereto. When the limits of a producing oil and gas field are determined by the Geological Survey, and the same is designated by it as such, the designation relates to the time that the production began, and the filing of an application for a prospecting permit for lands then known to be within a producing oil field, although not yet designated, does not confer upon the applicant any vested right or constitute a ground upon which the granting of a permit under the act can be enforced by him. Haupt, 48 L. D. 355. This case cites and follows the cases of Mason, *supra*, and Watson, 48 L. D. 214, and cites and construes the cases of Payne vs. C. P. R. Co., 255 U. S. 228; Payne vs. New Mexico, 255 U. S. 367; Payne vs. U. S., 255 U. S. 438; Wyoming vs. U. S., 255 U. S. 489.

The definition of a structure as within a producing oil and gas field is in effect a withdrawal of the lands from appropriation under § 13 of the Leasing Act, and an application for a permit, even though filed prior to such definition, does not confer any rights upon the applicant that will inure to his benefit upon the exclusion of the lands by reason of the redefinition of the structure. Where an application for a prospecting permit is denied because of the inclusion of the lands within a producing oil and gas field, such application can not be revived by reinstatement upon a subsequent restoration of the lands, but they will be open to prospecting after their restoration as though no application had been filed. Hopkins, *supra*. There is nothing in the Leasing Act nor the regulations thereunder which gives exclusive segregative effect to a mere application for a prospecting permit. Until the Land Department has satisfied itself as to the qualifications of the first applicant and issued a permit to him, applications may be filed by others and if the first application is rejected their claims will be considered in the order initiated until one qualified to receive a permit is found; after which all subsequent applications must be rejected. Eaton vs. Butts, 50 L. D. 341.

[13] 2 Supp. U. S. Comp. St. p. 1410, § 4640*fff*. The Land Department has held that in case a permittee is unable to begin drilling operations with the exercise of diligence within six months from date of the permit, action will not be taken looking to the cancellation of the permit but that twelve months and ten days from date thereof authorized, every permittee is required to file a corroborated affidavit specifying the work done upon the land embraced in the permit, together with such other information as may be pertinent to his operations thereon. Tieck vs. McNeill, 48 L. D. 158.

A permittee who has been unable with the exercise of due diligence to comply with the terms of the permit issued under any section of the act, may, if the facts warrant, be granted an extension of time upon filing an application therefor, accompanied by his own affidavit setting forth what effort, if any, he has made to comply with the terms of his permit and the reasons for delay in the full compliance therewith, and such showing to be accompanied by a corroborating affidavit of at least one disinterested person having actual knowledge of the facts.

The affidavit by the applicant must also show the time when he proposes to commence or resume his operations and any arrangements he has made for complying with the terms of the permit.

An extension of time to perform one of the acts required by the permit necessarily extends for the same period the time for the performance of all subsequent requirements, and as the bond is expressly limited by its terms to the period for which the permit was granted, the permittee must furnish a properly executed assent by the surety to the extension of his bond to cover the life of the permit as it will be extended if an extension is granted.

The application may be filed in the General Land Office or in the local land office having jurisdiction over the land involved by the permit. In the latter event proper applications will be promptly forwarded to the first named office by the local officers.

In cases where applications for extensions, filed in the local offices, are not in affidavit form and duly corroborated or are not accompanied by the required assent by the sureties on the bonds the local officers will require the permittee to remedy these defects within fifteen days from receipt of notice and will transmit the applications with evidence of service and a report of action taken at the expiration of the time allowed. Instructions, 49 L. D. 403. An oil and gas prospecting permit is to be considered in force until it has been canceled by the General Land Office and the cancellation noted upon the tract books of the local land office. Instructions, 50 L. D. 364. As to notation of cancellations, see Instructions, 50 L. D. 299.

land be surveyed; and in an approximately square or rectangular tract if the land be an unsurveyed tract, the length of which shall not exceed two and one-half times its width.[14]

§ 8. Monument and Notice.

If the applicant shall cause to be erected upon the land for which a permit is sought a monument not less than four feet high, at some conspicuous place thereon, and he shall post a notice in writing on or near said monument, stating that an application for permit will be made within thirty days after posting said notice, the name of the applicant, the date of the notice, and such a general description of the land to be covered by such permit by reference to courses and

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[14] 2 Supp. U. S. Comp. St. p. 1409, § 4640¼*ff* (§ 13). See § 11, *infra*. While it is essential to the validity of a mining location that there be a prior marking of the boundaries of the property upon the ground so that the same may be readily traced, it is not believed that Congress intended by the use of the word "locate" in the Leasing Act, to impose any such requirement upon an applicant for a permit to prospect for oil or gas. On the contrary, it would seem that the act contemplates that the right to a permit may be initiated by filing an application therefor in the land office, specifically describing them by legal subdivisions, if surveyed, and if unsurveyed, by metes and bounds. This view is strongly supported in the further provision of the act which reads: "The applicant shall, within ninety days after receiving a permit, mark each of the corners of the tract described in the permit upon the ground with substantial monuments, so that the boundaries can be readily traced on the ground, and shall post in a conspicuous place upon the lands that such permit has been granted and a description of the lands covered thereby." This makes clear that one to whom a permit has been granted must thereafter go upon the lands and establish such monuments and post such notice as will make it easily understood by others inspecting the land to what extent it is claimed by the prior applicant. Manifestly the purpose of the act in primarily requiring of an applicant for a permit that he "locates such lands in a reasonably compact form" was to provide a plan for orderly arrangement and selection and to demand of the applicant that he determine, choose or locate the lands to be prospected, with due regard to form, shape and external lines. The condition imposed relates solely to these matters and was not intended to mean that the area applied for should in the first instance be *located* in the same manner as mining claims are located under the mining laws of the United States. Van Houten & Dowd, 48 L. D. 185.

In prescribing the length and width of unsurveyed tracts which may be embraced in prospecting permits, Congress apparently intended to prevent an applicant from securing an undue advantage by locating a long and narrow tract of land across a geologic structure, and assumed that unsurveyed land was unappropriated and could be taken in the prescribed form. In construing the provisions of section 13 as to compactness of areas that may be included in a prospecting permit the Land Department has held that those provisions of the section were directory, not mandatory. For example, it has been held that incontiguous tracts within a square of six miles may be included in a permit where conditions are such that, because of prior disposals, a reasonable area of contiguous land can not be procured. Mathews, 48 L. D. 239. This case is cited in the case of Spindle Top Oil Ass'n. vs. Downing, 48 L. D. 555, and therein it is said: "The Department has held that the requirement of the statute is directory and not mandatory. (Fred Mathews, 48 L. D. 239). The rule as laid down in the regulations is that incontiguous tracts within a limited radius may be included in a permit when conditions are such that because of prior disposals a reasonable area of contiguous land can not be procured. This is a flexible rule and each case presented must be considered in the light of the particulars existing therein. Where an applicant in good faith presents an application which the Commissioner determines does not conform to the requirements of compactness, it has been the practice to allow him to make an election as to the tracts he will retain, and such right is not defeated by a subsequent section 13 application. The defect is considered to be a curable defect, and in this case it was cured within the time allowed by the Commissioner." See Dripps vs. Allison Mines Co., 45 Cal. A. 95, 187 Pac. 448. There is nothing in the Leasing Act which expressly directs or indeed suggests that the maximum area may at all times be applied for and the issuance of a permit therefor insisted upon by the applicant. On the contrary, the expressed requirement that permits for surveyed lands cover an area in a reasonably compact form suggests a limitation which must prevail as against the provision that prospecting permits shall be issued for "*not to exceed* two thousand five hundred and sixty acres." The fact that but one test well is required to prove the oil-bearing character of all the land covered by a permit, thus making it subject to lease, also presents an added reason for holding that one permit can only be issued for incontiguous tracts which are, as stated in the Regulations of March 11, 1920 (47 L. D. 437), within a "limited radius." The Land Department has held on numerous occasions that a general area equal to a township, that is, an area six miles square, represents the maximum over which prospecting can properly be carried on under one permit, pursuant to the Leasing Act. This construction of what constitutes an area in a "reasonably compact form" within the meaning of this section of the act is one of extreme liberality which the Land Department states it will not be warranted in modifying by way of enlargement except in cases involving special conditions. Curns, 50 L. D. 353.

distances from such monument and such other natural objects and permanent monuments as will reasonably identify the land, stating the amount thereof in acres, he shall during the period of thirty days following such marking and posting, be entitled to a preference right over others to a permit for the land so identified.[15]

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[15] 2 Supp. U. S. Comp. St. p. 1409, § 4640½*ff* (§ 13). The monument may be of iron, stone, or durable wood, not less than four inches square or in diameter, and must be firmly embedded in the ground. The notice must be so protected as to prevent its destruction by the elements. The preference right accorded by the act in the award of an oil and gas prospecting permit to one who has properly monumented and posted notice in accordance with the provisions of the act must be denied if the terms of the act with respect thereto are not strictly complied with. For example, should it be made to appear that the monument erected by one who seeks a preference right was less than four feet high, the Land Department would feel obligated to deny the claim of preference right. Blakesley vs. McCord, 49 L. D. 419. As between two conflicting applications for an oil and gas prospecting permit, no such preference right is acquired by the second applicant by reason of his previous location of the land and posting of notice thereon as will defeat a proper application filed prior thereto. Van Houton vs. Dowd, *supra*.[(a)]

The act does not require the posting of notice on the land preliminary to the filing of an application for an oil and gas prospecting permit, and one who posts notice and applies for a permit under section 13 of the act after filing an application by another under that section does not acquire a preference right to a permit. Spindle Top Oil Assn. vs. Downing, *supra*.[(a)] The general Rules of Practice relating to the serving of notice are applicable to oil prospecting permit cases in which the question of preferred right is involved with respect to unperfected and patented entries containing reservation of the minerals to the United States, and the regulation which requires personal service is to be construed to include actual service by registered mail, when possible, or by publication when proper showing is made that the person to be served can not be found. Stevens, 48 L. D. 110. For Rules of Practice see 48 L. D. 246.

In the case of Rousseau (47 L. D. 590), it appears that Rousseau's application for a permit to prospect for oil and gas upon certain lands was not filed in the local land office until the thirty-first day after the posting of his notice upon the land included therein. The last day of the thirty-day period succeeding the date of posting fell on Sunday and this fact gave rise to the question as to whether, in such a case, the last day should be included in the period, or, on the other hand, excluded therefrom, and the succeeding day be included. If such a Sunday is entitled to be excluded, the filing of Rousseau was in time; otherwise, it was one day out of time. It is provided in Rule 94 of Practice of the Land Department that—"In computing time for service under the rules of practice, the first day shall be excluded and the last day included: Provided, That where the last day is a Sunday, a legal holiday, or half holiday, such time shall include the next full business day." In the case of Street vs. U. S., (133 U. S. 306), it is declared by the Supreme Court of the United States that Sunday is a *dies non* and that—"A power may be exercised up to and including a given day of the month may generally, when that day happens to be a Sunday, be exercised on the succeeding day." In Monroe Cattle Co. vs. Becker, 147 U. S. 56, it is held to be a general rule that—"When an act is to be performed within a certain number of days, and the last day falls on Sunday, the person charged with the performance of the act has the following day to comply with his obligation."

The above quoted provisions of said Rule 94 are thus in full accord with what the Supreme Court of the United States has held to be the general rule in cases where the last day of the period within which an act is to be performed falls on Sunday, and the Land Department is of opinion that the same principle should be followed with respect to all filings required by statute to be made in the Land Department within a limited period, viz, that if the last day of a statutory period within which a filing is required to be made falls on Sunday or a legal holiday, such time shall be held to include the next following business day.

Authority to consider and determine the merits and validity of applications for oil and gas prospecting permits, in the first instance, resides in the Commissioner of the General Land Office, and the fact that the local officers, whose functions in this respect are merely ministerial, received without rejection an application, together with the prescribed bond and fees, does not of itself confer upon the applicant any right to have his application allowed. Craig, 50 L. D. 202.

Rights to an oil and gas prospecting permit do not attach prior to the filing of an application in the form and manner prescribed by the act and the Departmental Regulations issued thereunder, and the mere posting of a notice of intention to apply for a permit is not sufficient to defeat the provisions of § 13 of the act, which limits its operation to land that is "not within any known geological structure of a producing oil or gas field." Lee, *supra*.[(b)] An application for an oil and gas prospecting permit is in effect a mere request that a license be granted and confers upon the applicant no interest in the lands or the mineral deposits therein. Enlow vs. Shaw, 50 L. D. 339.

In the case of Judge (49 L. D. 171) the Land Department laid down the general rule that until an outstanding permit is canceled by the Commissioner of the General Land Office, and the notation of the cancellation made in the local office, no other person will be permitted to gain any right to a permit for the same class of deposits on the land included therein, by the filing of an application therefor or by the posting of notice of intention to apply for a permit. See, also, New Mexico vs. Weed, 49 L. D. 580. In Purvis vs. Witt (49 L. D. 260), it was held that a duly corroborated protest or contest against a permit sufficiently alleging failure to comply with the

§ 9. Additional Demarcation.

The applicant shall, within ninety days after receiving a permit, mark each of the corners of the tract described in the permit upon the ground with substantial monuments, so that the boundaries can be readily traced on the ground, and shall post in a conspicuous place upon the lands a notice that such permit has been granted and a description of the lands covered thereby.[16]

§ 10. Lease to Permittee.

Upon establishing to the satisfaction of the Secretary of the Interior that valuable deposits of oil or gas have been discovered within the limits of the land embraced in any permit, the permittee shall be entitled to a lease for one-fourth of the land embraced in the prospecting permit: *Provided,* That the permittee shall be granted a lease for

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law in matters not shown by the records or known to the Land Department should be entertained and considered by said commissioner with a view to the ordering of a hearing for the ascertainment of the facts. There was nothing in this decision which in any way modified the rule announced in the Judge Case, or suggested that a protestant would gain a preference right to a permit in the event the protest was sustained. Section 2 of the act of May 14, 1880 (21 Stat. 140), as amended by the act of July 26, 1892 (27 Stat. 270), has no application to contests against permits under the Leasing Act, and the act itself gives no such preference right. The fact that a permit application for deposits covered by an existing permit is accompanied by a protest which ultimately results in its cancellation does not give the applicant any special or preferred status, or except from the operation of the general rule. The permit has a segregative effect, the deposits covered by it are not the subject of appropriation until it is canceled and notation thereof made in the local land office, and an application therefor filed prior to that time will not be recognized. Stahl vs. Stiffler, 49 L. D. 406.

A protest by an oil placer mining claimant against the allowance of a prospecting permit, containing no allegation which, if substantiated by evidence adduced at a hearing, shows that the protestant is entitled to complete his claim under the placer mining laws or to use the same as a basis for a permit or lease under any of the relief provisions of the act, is not sufficient to defeat a permit application filed under section 13 of the act. McGee vs. Wooten, 48 L. D. 147.

The Leasing Act does not presume to take away from the owner of a valid subsisting oil placer mining claim vested rights which he might have accruing through operation under the placer law prior to the Leasing Act. Such owner is not required to make an application to the Department of the Interior for a lease upon the premises, but has the right, if he so desires, at his own option to maintain and prosecute his claim under the placer mining law, through which it had been taken up. He may, however, give up his right to prosecute it under the placer mining law. He may, however, transfer his title in and to the property by deed to the government as a condition precedent to receiving a lease. Robbins vs. Elk Basin Co., 285 Fed. 179.

[16] 2 Supp. U. S. Comp. St. p. 1409, § 4640½*ff* (§ 13). In Tieck vs. McNeill, *supra,* [13] it is said: "The purpose of posting and marking the corners on the land embraced in a permit is to give notice of the fact that a permit has been granted for that particular tract of land. In this case it appears that the protestant is fully aware that a permit was granted for said land and his only purpose in seeking the cancellation of the permit is to enable him to make application for a permit. To allow contests against permits for such purpose would be to invite endless litigation, which would tend to defeat the very purpose of the oil and gas leasing act, to wit: developing of the oil and gas resources of the country. The only question raised by this protest is whether an oil and gas permit is subject to contest by a third party. The only parties in the case of an oil and gas permit is the permittee and the United States and a contestant could acquire no preference right to a permit though the contest was sustained and the permit canceled. The enforcement of the stipulation in a permit rests with the Department and evidence that the permittee is not complying with the terms of his permit is welcome, but a contest by a third party is not the proper procedure and the application is, therefore, denied and the protest dismissed without right of appeal."

Where an application for a permit is filed in good faith for lands shown by the records of the local land office to be free from conflicting claims, such application constitutes a bar to the amendment of subsisting permit applications, although based upon location notices posted upon the land, if there were no apparent error in those applications when filed. A location notice, posted as prescribed by the act, has a segregative effect for a period of thirty days only, and when an application for a permit is filed the application becomes the notice to all applicants that the land described therein is adversely claimed and can not be amended after the expiration of the thirty-day period to conform to the description posted, in the presence of a *bona fide* intervening claim. Neither the act nor the Departmental regulations issued pursuant thereto make distinction between surveyed and unsurveyed lands as to preference rights initiated under the provisions of the act by the posting of location notices, except that greater particularity is required in the descriptions of lands of the latter class. Wagner vs. Coffin, 49 L. D. 655. See Eaton vs. Butts, *supra.*[12]

as much as one hundred and sixty acres of said lands, if there be that number of acres within the permit.[17]

§ 11. Survey of Land.

The area to be selected by the permittee, shall be in compact form and, if surveyed, to be described by the legal subdivisions of the public land surveys; if unsurveyed, to be surveyed by the government at the expense of the applicant for lease in accordance with the rules and regulations to be prescribed by the Secretary of the Interior and the lands leased shall be conformed to and taken in accordance with the legal subdivisions of such surveys; deposits made to cover expense of surveys shall be deemed appropriated for that purpose, and any excess deposits may be repaid to the person or persons making such deposit or their legal representatives.[18]

§ 12. Term of Lease, Royalty and Rent.

Such leases shall be for a term of twenty years upon a royalty of five per centum in amount or value of the production and the annual payment in advance of a rental of one dollar per acre, the rental paid for any one year to be credited against the royalties as they accrue for that year, with the right of renewal as prescribed in section 17 of the act.[19]

§ 13. Lease for Remainder of Land.

The permittee shall also be entitled to a preference right to a lease for the remainder of the land in his prospecting permit at a royalty

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[17] 2 Supp. U. S. Comp. St. p. 1410, § 4640*1g* (§ 14).

[18] Id. See note 14, *supra*.

[19] Id. The date of the filing of the application, not the date of the granting of the lease, determines the time from which the annual rental begins to accrue, where an oil and gas lease is granted pursuant to the act, to an applicant who, from and after the filing of the application therefor, has had uninterrupted possession and use of the premises. Big-4 Oil Co., 49 L. D. 482. If a permittee assign to one person his permit rights with respect to a fractional part of the area included in his permit, and intended to represent five per cent land, and assign to another person the remainder of the permitted tract, it will be necessary, upon the discovery of oil or gas upon the permitted tract, for each of the assignees seeking a lease to covenant separately and individually with the government for drilling upon the area included in his assignment, as leases which might be issued to such assignees would represent separate and distinct undertakings. Where the permit rights are assigned to specific tracts covered by a permit to several individuals, each person acquiring a separate tract, it must necessarily follow that upon discovery and the issuance of leases a separate lease will issue to each individual and each individual will be obligated to the government as to that particular tract, hence it follows that each individual in complying with the terms of the lease must proceed to the drilling operations covered by his lease. There are no particular circumstances that can be advanced to justify the waiving of the obligation to proceed to drilling in such instances, but where the enforcement of this rule would appear to be inequitable upon a showing to this effect the government will give each particular case its individual attention, and, if the particular facts justify suspension of the requirement, such action will be taken.

Where the permittee, upon the discovery of oil or gas, takes in his own name one lease for a part of the area under a five per cent royalty and another lease of the remainder of the area on a sliding scale royalty, these leases are designated by the Land Department as A and B, respectively, and so long as they remain in the name of the original permittee they may for certain purposes be regarded as one obligation, but it is obvious that the law does not intend that the lessee may, nor will the Land Department permit him to, confine his drilling to the land upon which he is paying five per cent royalty, and defer drilling upon the remainder of the land with respect to which, under the law and regulations, he is required to pay the higher royalty. In such cases the lessee will also be required to comply with the drilling regulations as to both tracts as provided in paragraph (b), section 2, of the lease, viz: to not only drill wells to offset wells on adjoining privately owned lands, but to also promptly drill wells on the said higher royalty lands to offset wells drilled by him on his five per cent area. The practice of the Land Department, in regarding such leases as a single undertaking for certain purposes is merely for the convenience of the lessee and the Land Department and is not designed to relieve the lessee of the necessity of complying with his obligations as to drilling with respect to either the five per cent or the higher royalty portion of the area. Armstrong, 49 L. D. 445.

of not less than 12½ per centum in amount or value of the production, and under such other conditions as are fixed for oil or gas leases in this act, the royalty to be determined by competitive bidding or fixed by such other method as the Secretary may by regulations prescribe: *Provided*, that the Secretary shall have the right to reject any and all bids.[20]

§ 14. Payments Prior to Lease.

Until the permittee shall apply for lease to the one-quarter of the permit area provided for in the act he shall pay to the United States twenty per centum of the gross value of all oil or gas secured by him from the lands embraced within his permit and sold or otherwise disposed of or held by him for sale or other disposition.[21]

§ 15. Conditions of Permit or Lease.

All permits and leases containing oil or gas, made or issued under the provisions of the act, shall be subject to the condition that no wells shall be drilled within two hundred feet of any of the outer boundaries of the lands so permitted or leased, unless the adjoining lands have been patented or the title thereto otherwise vested in private owners, and to the further condition that the permittee or lessee will, in conducting his explorations and mining operations, use all reasonable precautions to prevent waste of oil or gas developed in the land, or the entrance of water through wells drilled by him to the oil sands or oil-bearing strata, to the destruction or injury of the oil deposits. Violations of the provisions of this section (16 of the act) shall constitute grounds for the forfeiture of the permit or lease, to be enforced through appropriate proceedings in courts of competent jurisdiction.[22]

§ 16. Competitive Bidding.

All unappropriated deposits of oil or gas situated within the known geological structure of a producing oil or gas field and the unentered lands containing the same, not subject to preferential lease, may be leased by the Secretary of the Interior to the highest responsible bidder by competitive bidding under general regulations to qualified applicants in areas not exceeding six hundred and forty acres and in tracts which shall not exceed in length two and one-half times their width, such leases to be conditioned upon the payment by the lessee of such bonus as may be accepted and of such royalty as may be fixed in the lease, which shall not be less than 12½ per centum in amount or value of the production, and the payment in advance of a rental of not less than one dollar per acre per annum thereafter during the continuance of the lease, the rental paid for any one year to be credited against the royalties as they accrue for that year.[23]

§ 17. Period of Lease.

Leases shall be for a period of twenty years, with the preferential right in the lessee to renew the same for successive periods of ten

[20] 2 Supp. U. S. Comp. St. p. 1410, § 4640¼*g* (§ 14).
[21] 2 Supp. U. S. Comp. St. p. 1410, § 4640¼*gg* (§ 15).
[22] 2 U. S. Comp. St. p. 1411, § 4640¾*h* (§ 16).
[23] 2 U. S. Comp. St. p. 1411, § 4640¾*hh* (§ 17).

years upon such reasonable terms and conditions as may be prescribed by the Secretary of the Interior, unless otherwise provided by law at the time of the expiration of such periods.[24]

§ 18. Reduction of Royalty.

Whenever the average daily production of any oil well shall not exceed ten barrels per day, the Secretary of the Interior is authorized to reduce the royalty on future production when in his judgment the wells can not be successfully operated upon the royalty fixed in the lease. The provisions of section seventeen of the act shall apply to all oil and gas leases made under the provisions of said act.[25]

§ 19. Relinquishment of Placer Claims.

Under the provisions of the act claimants of oil or gas locations, under the preexisting placer mining law, and which locations were within certain withdrawn areas, could relinquish their right thereto and obtain a lease thereof. Such a lease was conditioned upon the payment of royalty to the United States of an amount equal to the value of one-eighth of all oil or gas with certain prescribed exceptions, produced from the relinquished area, and the fulfillment of other requirements enumerated within section eighteen of the act.[26]

§ 20. Inuring Clause.

All leases under the act shall inure to the benefit of the claimant and all persons claiming through or under him by lease, contract, or otherwise, as their interests may appear, subject, however, to the same limitation as to area and acreage as is provided in section 18 of the act. No lease nor leases under said section shall be granted, nor shall any interest therein, inure to any person, association, or corporation for a greater aggregate area or acreage than the maximum in said section provided for.[27]

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[24] 2 U. S. Comp. St. p. 1411, § 4640¼*hh* (§ 17).

[25] Id.

[26] 2 Supp. U. S. Comp. St. p. 1411, § 4640¾*i* (§ 18). For determination of the validity of gas claims under preexisting law to land embraced in the Executive order of withdrawal issued September 27, 1909, (§ 18*a*), see 2 Supp. U. S. Comp. St. p. 1413, § 4640¾*ii*. This provision was extended to Utah by act of September 15, 1922, 42 Stat. 844. Estate of Ladd (on rehearing), 48 L. D. 313. This section of the act also provides for the settlement of all suits brought by the government affecting such lands and the release of impounded royalties. In the Ladd Case it was said: "This provision indicates unmistakably that the granting of a lease under section 18 was intended by the act to be made a matter wholly independent of any contract that might have been entered into by the lease applicant or his predecessor or predecessors in interest with respect to the land, under the provisions of the act of August 25, 1914. It does, however, contemplate that controversies giving rise to such contracts, shall, as well as suits, be settled in harmony with the provisions of section 18 of the Leasing Act and that moneys impounded pursuant to such contracts shall be paid in accordance with settlements and adjustments so made."

[27] 2 Supp. U. S. Comp. St. p. 1413, § 4640¾*i* (§ 18). The issuance of an oil and gas lease by the Department of the Interior to the owner of placer mining claims on the application of such owner and the holders of a lease from him is not an adjudication of the rights of such lessee as against earlier lessees especially in view of the "inuring" clause of the Leasing Act. Burke vs. Horth, 296 Fed. 256. See, also, note 92, *infra*.

It clearly appears from this section and from the following section 19 that the "claimant" is the person who located the land under the mining laws or who claims under the locator or locators through a deed or equivalent instrument. That lessees of such person or persons claiming under them through drilling contracts or other arrangements are not regarded as persons eligible to a lease from the United States. The purpose of section 18 of the act obviously is to permit the Land Department to deal with the holder or holders of the record mining title. He or they must surrender and convey that title to the United States. Those who claim through or under him are not recognized as persons entitled to a lease, but their interest is protected by the inuring clause so that if lease issue to him, their interests may be determined by agreement or litigation in the proper form and protected. Burke vs. Taylor (on rehearing), 47 L. D. 586.

§ 21. Placer Claims Lacking Discovery.

Any person who on October 1, 1919, was a *bona fide* occupant or claimant of oil or gas lands under a claim initiated while such lands were not withdrawn from oil or gas location and entry, and who had previously performed all acts under then existing laws necessary to valid locations thereof except to make discovery, and upon which discovery had not been made prior to the passage of the act, and who had performed work or expended on or for the benefit of such locations an amount equal in the aggregate of two hundred and fifty dollars for each location if application therefor shall be made within six months from the passage of the act shall be entitled to prospecting permits thereon upon the same terms and conditions, and limitations as to acreage, as other permits provided for in this act.[28]

[28] 2 Supp. U. S. Comp. St. p. 1413, § 4640½*j* (§ 19). See Cotner vs. Isgrig, 49 L. D. 224. The right conferred by this section is in the nature of a preference right or privilege which may be exercised or waived, at the option of the occupant or claimant, and is of necessity waived if not asserted within the time and in the manner prescribed by the law and the applicable regulations. When so waived, the land becomes subject to disposition to the public generally or to any other claimant recognized by the law as entitled to priority. Murane, 48 L. D. 526. The claim of an applicant for a lease under the relief provisions of this section (19 of the act), who asserts in support thereof an inchoate right under the placer mining laws, but who, during a period of several years prior to October 1, 1919, never made a discovery of oil or gas, stood idly by and without protest permitted others to acquire apparent title, and deal with as their own, and as though he had no right, must be treated as an abandoned claim, not entitled to equitable consideration under said section. Bradley, 49 L. D. 235, citing Galliher vs. Caldwell, 145 U. S. 368; Moran vs. Horsky, 178 U. S. 205; Burke vs. Taylor, 47 L. D. 585. An applicant for an oil and gas prospecting permit under section 19, who is unable to show sufficient fulfillment of the expenditure requirement of that section necessary to entitle him to a permit thereunder, can not be allowed to amend his application and take a permit under section 13 of the act in the presence of an adverse claim existing by reason of the pendency of an application previously filed by another under the latter section. Keenan, 48 L. D. 218.

In the case of Sullivan vs. Tendolle (48 L. D. 337), it is said: "Section 19 of the Leasing Act under which the application was filed provides, among other things, that the claim upon which the application is predicated must have been initiated while the land was not withdrawn from oil and gas location and that the claimant must have previously performed all acts under then existing laws necessary to a valid location except to make discovery. At the time the asserted location of the Tip No. 7 claim is alleged to have been made, the land in question was included in the *prima facie* valid homestead entry of Tendolle; and said entry has ever since remained intact, and down to November 22, 1920, long after the date of the initiation of the claim under the mining laws to the land, and nine months after the passage of the Leasing Act, the entry was unrestricted. The general rule announced by the Supreme Court of the United States is that a *prima facie* valid entry of public land under the laws of the United States segregates the land from the public domain, appropriates it to private use, and withdraws it from subsequent entry or acquisition until such entry has been canceled of record. See Neff vs. U. S. (165 Fed. 273, 281), and cases there cited. While the cases cited involve conflicts between subsisting agricultural entries and junior nonmineral claims, the Supreme Court, in Bunker Hill and Sullivan Mining Company vs. U. S. (226 U. S. 548), declared that the same principle would apply in case of a conflict between an uncanceled homestead entry and an attempted junior mining location. In that case it was urged that certain land covered by the homestead entry of one Messinger, from which timber had been cut by the entryman and sold to the plaintiff in error, was not suited for agricultural purposes and could not be entered under the homestead law; that being mineral land in fact and open to mining location, it was subject to the provisions of the act of June 3, 1878 (20 Stat. 88), which authorizes any citizen of the United States to enter upon public lands open to mineral entry in order to cut timber therefrom; that the homestead entry was void, and that any citizen, the entryman included, could treat the land as public land of the United States and cut the timber thereon. Answering that contention, the court said: 'The statute on which the mining company relies, applies only to public lands, while this was no longer public in the full sense, although the title remained in the government which could have canceled Messinger's entry on proof that it was valuable for mineral purposes. Deffebach vs. Hawke (115 U. S. 302). But until some such action by the United States, Messinger's entry segregated the land from the public domain and made it so far private as to withdraw it from the operation of the law permitting other citizens to locate mines or cut timber on public mineral lands. Hastings & D. R. Co. vs. Whitney (132 U. S. 537); Shiver vs. U. S. (159 U. S. 491, 495). Until his claim was canceled Messinger was entitled to exclude others from the quarter-section. And as they would have been estopped, as against him, from denying that he was lawfully in possession of it as a homestead, so was he estopped from denying that it was a homestead when sued for cutting timber in violation of the law applicable thereto.' To the same effect also is the decision in McLemore vs. Express Oil Co. (158 Cal. 559, 112 Pac. 59). From said decisions it is clear that the land here in question being then covered by the homestead entry was not subject to location at the time the asserted claim relied upon by Sullivan et al. was initiated and neither then nor

§ 22. Effect of Prior Discovery.

Where any such person has heretofore made such discovery, he shall be entitled to a lease thereon under such terms as the Secretary of the Interior may prescribe unless otherwise prescribed for in section 18 of the act: provided, that where such prospecting permit is granted upon land within any known geological structure of a producing oil or gas field, the royalty to be fixed in any lease thereafter granted thereon or any portion thereof shall be not less than 12½ per centum of all the oil or gas produced except oil or gas used for production purposes on the claim, or unavoidably lost.[29]

§ 23. Lands Reserved for Use of Navy.

The provisions of this section (19 of the act) shall not apply to lands reserved for the use of the Navy.[30]

§ 24. Fraud.

No claimant of a permit or lease who has been guilty of any fraud or who had knowledge or reasonable grounds to know of any fraud, or who has not acted honestly and in good faith, shall be entitled to any of the benefits of this section of the act.[31]

§ 25. Legal Representatives.

All permits or leases hereunder shall inure to the benefit of the claimant and all persons claiming through or under him by lease, contract, or otherwise, as their interests may appear.[32]

§ 26. Preference Rights to Surface Holder.

In the case of lands *bona fide* entered as agricultural, and not withdrawn or classified as mineral at the time of entry, but not including lands claimed under any railroad grant, the entryman or patentee, or assigns, where assignment was made prior to January 1, 1918, if the entry has been patented with the mineral right reserved, shall be entitled to a preference right to a permit and to a lease as in the act provided, in case of discovery; and within an area not greater than a township, such entryman and patentees, or assigns holding restricted patents may combine their holdings, not to exceed two thousand five hundred and sixty acres for the purpose of making joint application. Leases executed under this section (20 of the act) and embracing only

since has the tract been opened to the inception or completion of location rights pursuant to the mining law. Therefore, such attempted location, as to said tract, affords no basis for a permit under section 19 of the Leasing Act because lacking the element of basic validity in addition to that of discovery, and constitutes no bar to the subsequent permit application of Tendolle." But the location of a mining claim, although coupled with mere possession and occupany if unaccompanied by diligent prosecution of work leading to the discovery of mineral, are, in the absence of discovery, insufficient grounds for a lawful exclusion from the land of others who seek to make mineral discovery and development thereon. Clark & Ohio Oil Co., 48 L. D. 630. See note 91, *infra*.

[29] 2 Supp. U. S. Comp. St. p. 1414, § 4640½j (§ 19). An application for a prospecting permit under section 13 once denied in connection with favorable action upon conflicting applications under section 19 will not be reinstated to the prejudice of the competing applicants, if the defeated applicant did not first seek his remedy under the original application by appeal or otherwise. Haupt, 48 L. D. 355.

[30] 2 Supp. U. S. Comp. St. p. 1414, § 4640½j.

[31] Id. See Love vs. Flahive, 205 U. S. 195; Jones vs. Hoover, 144 Fed. 221.

[32] 2 Supp. U. S. Comp. St. p. 1414, § 4640½j. See § 20, *supra*. The rights of an oil and gas prospecting permit under section 13 of the act, pass, on the death of the applicant, to the personal representatives in the same manner as does other personal property. Haynes vs. Smith (on petition), 50 L. D. 208.

lands so entered shall provide for the payment of a royalty of 12½ per centum as to such areas within the permit as may not be included within the discovery lease to which the permittee is entitled under section 14 of the act.[33]

[33] 2 Supp. U. S. Comp. St. p. 1414, § 4640½jj (§ 20). The provisions of this section have no application to entries allowed at any time under the Stock-Raising Homestead Law. Johnson, 48 L. D. 353. An entryman whose entry has been allowed under the Enlarged Homestead Act, upon an application accompanied by the required showing and payment, filed previously to the inclusion by Executive order of the land within a petroleum reserve, is entitled to the exercise of the preference right privilege to an oil and gas prospecting permit accorded by said section 20, notwithstanding that the withdrawal was made prior to the allowance of the entry, and that the entry was allowed subject to the reservations of the act of July 17, 1914 (38 Stat. 509). Johnson, *supra*. See, also, Fletcher, 49 L. D. 204. The privilege of being preferred in the award of an oil and gas prospecting permit accorded by section 20 in favor of an entryman of lands *bona fide* entered as agricultural, and not being withdrawn or classified as mineral at the time of the entry, does not inure to the benefit of one who had only a settlement claim for surveyed public land at the date of the withdrawal. Fletcher (on petition), *supra*. The preference right granted by said section to one who had *bona fide* made an agricultural entry of lands not withdrawn or classified as mineral, to prospect for oil and gas attaches upon the filing of a completed application for a permit, accompanied by the required fees, and such right is not thereafter forfeited by the subsequent relinquishment of the basic entry prior to the actual issuance of the permit. The rule that an application to enter public land subject to entry, when accompanied by the requisite showing and fees, is equivalent to entry, applies with equal force to proper applications filed by qualified persons for permits to prospect for oil and gas on lands subject to exploration under said section. Heryford vs. Brown, 49 L. D. 248, citing and applying Conrad, 39 L. D. 432; Rippy vs. Snowden, 47 L. D. 321; Johnson, *supra*. See, also, Arouni vs. Vance, 48 L. D. 543.

When an entryman had not completed his final proof when the land was classified as valuable for oil, he is not therefore entitled to an unrestricted patent. However, he will be entitled, upon filing his consent to the reservation of the oil and gas to the government, to a preference right to a prospecting permit under section 20 of the act. It is settled law that land covered by an agricultural entry without a reservation of the oil and gas to the government can not be included in a prospecting permit, even to the entryman himself, so long as the entry subsists without such reservation. Since the entryman's consent to a mineral reservation must be given before he can exercise his preference right to a permit his qualifications must be determined as of the date that he files such consent. La Flame, 49 L. D. 324.

A vested equitable right to a patent for both the surface and mineral deposits in public land is not acquired until an entryman has done everything required by law toward earning title. Such a vested equitable title is necessary to deprive the Government of its right to classify entered lands as prospectively mineral. Payment of fees and commissions is a necessary act toward earning title. Martin, 49 L. D. 608; Terrell, 49 L. D. 671.

The preferment in the award of an oil and gas prospecting permit accorded to a homestead entryman by section 20 of the act, over a prior applicant for a permit under section 13 of that act, is not affected by a pending contest against the entry where there is no charge that the entry was made with a view to acquiring the mineral deposits nor in bad faith for any purpose. Miller vs. Little, 50 L. D. 134.

A settlement claim under the homestead laws prior to the inclusion of the land within a petroleum withdrawal, which did not ripen into an entry until after the creation of the withdrawal, affords the entryman no basis for a preference right to an oil and gas prospecting permit under section 20 of the act. Haynes vs. Smith (on petition), *supra*.[62]

Where a homestead entry, patented with reservation of the oil and gas by the United States, has been sold or transferred subsequent to January 1, 1918, the transferee does not acquire a preference right under section 20 of the act, to prospect for oil or gas upon the patented land, but having become the sole owner of the land, subject to the reservation contained in the patent, he may, in the absence of other sufficient objection, be granted a prospecting permit under section 13 of the Leasing Act. Watson, 48 L. D. 214.

In Otrin vs. Hawkins (48 L. D. 622), it was said: "The Department is unable to concede the correctness of the contention of Hawkins that the permit application of Otrin was erroneously received because at the date of its presentation the land was covered by the unrestricted homestead application of Andrews, for by section 12 (c) of the regulations of March 11, 1920, reprint as amended to October 29, 1920 (47 L. D. 437, 444, 445), issued under the Leasing Act, the right of a person to file a prospecting permit application for a tract covered by the unrestricted homestead entry of another is expressly recognized, subject, however, to a future amendment of the entry to be obtained in the manner provided for in said section, and to the exercise by the entryman of a preference right, if any, to a permit under the provisions of section 20 of the act. It is clear, therefore, that immediately upon the cancellation, by voluntary relinquishment or otherwise, of such an entry pending a permit application for the land adverse to the entryman, the rights of the permit applicant, all else being regular, would be superior and paramount to those of a junior homestead applicant for the same tract. On the other hand, neither a permit application nor a permit granted thereon, would of necessity preclude the allowance of a homestead entry upon the land, for by section 20 of the Leasing Act it is expressly provided that the Secretary of the Interior, in making a lease (with a view to which a permit application is filed) under said act, may in his discretion reserve to the United States the right to sell or otherwise dispose of the surface of the lands embraced within such lease under existing laws, in so far as the surface

§ 27. Terms and Conditions.

Leases executed under this section (20 of the act) and embracing only lands so entered shall provide for the payment of a royalty of not less than $12\frac{1}{2}$ per centum as to such areas within the permit as may not be included within the discovery lease to which the permittee is entitled to under section 14 of the act.[34]

§ 28. Oil Shale.

The Secretary of the Interior is authorized to lease to any person or corporation qualified under the act any deposit of shale belonging to the United States and the surface of so much of the public lands containing such deposits, or land adjacent thereto, as may be required for the extraction and reduction of the leased minerals, under such

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is not necessary for use of the lessee in extracting and removing deposits thereon. And by departmental instructions of October 6, 1920 (47 L. D. 474), it is directed that application to make nonmineral entry of lands outside of areas which have been designated as within the geological structures of producing oil and gas fields shall be received by local officers, and if in any case nonmineral entry shall be allowed on instructions from the commissioner, the same will be with a reservation of the oil or gas to the United States and subject to the rights of the permittee or lessee, as the case may be, to use so much of the surface of the land as is necessary in extracting and removing the mineral deposits without compensation to the nonmineral entryman for such use. But while the right of a nonmineral claimant to make entry of land covered by the prior prospecting permit application of another is thus clearly recognized both by the provisions of the Leasing Act and the regulations thereunder, such an entry could not affect the unrestricted and unhampered use of the land for prospecting and developing purposes under a permit or lease."

Where a claimant who is asserting rights under the placer mining laws to withdrawn oil- and gas-bearing lands, files concurrently an application for a preferential lease, together with a quitclaim deed, pursuant to the provisions of section 18 (2 Supp. U. S. Comp. St. p. 1411, § 4640*ii*),and a request for a patent, it will be held that the claimant elected to accept the benefits conferred by the Leasing Act. Honolulu Con. Oil Co., 48 L. D. 303. A settlement claim made under the homestead laws prior to the inclusion of the land within a petroleum withdrawal, which did not ripen into an entry until after the creation of the withdrawal, affords the entryman no basis for a preference right to an oil and gas prospecting permit under § 20 of the act. Haynes vs. Smith, *supra*.[35] The act does not contemplate that an agricultural entry made after its approval shall constitute the basis of a preference right to a prospecting permit under § 20 thereof. Haupt, (47 L. D. 588). In this case, with a full knowledge of the policy of Congress as disclosed by the act, the claimant is shown to have gone upon the land March 2, 1920, and posted a notice of his intention to apply for a prospecting permit under § 13 of the act, and on March 5 to have made simultaneous filings in the local land office of an application for such permit and an application for homestead entry of the same lands, alleging in the homestead application that the land is essentially nonmineral, but evidently having in mind the assertion of a preference right to a permit under § 20 of the act, if for any reason his claim to a preference right under § 13 should be rejected. The claim for preference right, under § 20, was rejected, the entry not having been made prior to the date of the act. In Miller vs. Little, *supra*, it is said: "There is no express provision in section 20 of the Leasing Act, which requires that an entry be *maintained* according to the law under which it was made as a condition precedent to a preference right, the only requirement being that the entry be *made* in good faith. The entry was uncanceled when the waiver (to reserve the oil and gas deposits to the United States pursuant to the act of July 17, 1914) was filed and the land thereupon became subject to disposal under section 20 of the Leasing Act."

Where an indemnity school selection was made for lands not withdrawn nor classified as mineral when selected, but which were afterwards approved with a reservation of the oil deposits to the United States, a transferee is entitled to preference right under section 20 of the act, if the state had completed the selection and made the transfer prior to January 1, 1918, notwithstanding that the approval was subsequent to that date. Miller and Lux vs. How, 49 L. D. 177. See, also, Wyoming vs. Fry and Doyle, 49 L. D. 564. An applicant for a prospecting permit under § 13 of the Leasing Act is not required to serve notice on the owner of lands patented to a railroad company with reservation of the oil and gas under the act of July 17, 1914, inasmuch as claimants of railroad grant lands are excepted by § 20 of the former act from the preference right to permits thereunder. Staunton & Lee Simonsen, 48 L. D. 175.

One who makes a surface entry under the act of July 17, 1914, for lands embraced at time of entry within a petroleum withdrawal is not entitled to a preference right to an oil and gas prospecting permit under this section.

Where under the laws of the state a mortgage merely is a lien upon the property mortgaged, a mortgagee who purchases at foreclosure sale a homestead covered by his mortgage is not, prior to such purchase, entitled to claim as an assignee within the purview of said section. Schneider vs. Forster, 49 L. D. 610.

[34] 2 Supp. U. S. Comp. St. p. 1414, § 4640*jjj* (§ 20).

rules and regulations, not inconsistent with the act, as he may prescribe.[35]

§ 29. Extent of Area.

No lease for oil shale lands shall exceed five thousand one hundred and twenty acres of land, to be described by the legal subdivisions of the public land surveys, or if unsurveyed by the United States, to be surveyed by the United States, at the expense of the applicant, in accordance with regulations to be prescribed by the Secretary of the Interior.[36]

§ 30. Term of Lease.

Leases for oil shale lands may be for indeterminate periods, upon such conditions as may be imposed by the Secretary of the Interior including covenants relative to the methods of mining, prevention of waste, and productive development.[37]

§ 31. Royalty.

For the privilege of mining, extracting, and disposing of the oil or other minerals covered by a lease under this section (21 of the act) the lessee shall pay to the United States such royalties as shall be specified in the lease and an annual rental payable at the beginning of each year, at the rate of fifty cents per acre per annum, for the lands included in the lease, the rental paid for any one year to be credited against the royalties accruing for that year: such royalties to be subject to readjustment at the end of each twenty-year period by said Secretary.[38]

§ 32. Waiver of Royalties and Rental.

For the purpose of encouraging the production of petroleum products from shales the Secretary may, in his discretion, waive the payment of any royalty and rental during the first five years of any lease.[39]

§ 33. Preference Right in Oil Shale Lands.

Any person having a valid claim to such minerals under existing laws on January 1, 1919, shall, upon the relinquishment of such claim, be entitled to a lease under the provisions of this section (21 of the act) for such area of the land relinquished as shall not exceed the maximum area authorized by said section to be leased to an individual or corporation.[40]

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[35] 2 Supp. U. S. Comp. St. p. 1414, § 4640¼*k* (§ 21). See § 79, *infra*. Oil shale having been recognized by the Land Department and by Congress as a mineral deposit and a source of petroleum, and having been demonstrated elsewhere to be a material of economic importance, lands valuable on account thereof must be held to have been subject to valid location and appropriation under the placer mining laws, to the same extent and subject to the same provisions and conditions as if valuable on account of oil or gas. Entries and applications for patent for oil shale placer claims will, therefore, be adjudicated within the said department in accordance with the same legal provisions and with reference to the same requirements and limitations as are applicable to oil and gas placers. Instructions, 47 L. D. 548; Utah vs. Watson Oil Co., 50 L. D. 323.

[36] Id.

[37] Id. See section 35, *infra*.

[38] Id.

[39] Id.

[40] Id. See Utah vs. Watson, *supra*.[(35)]

§ 34. Fraud.

No claimant for a lease who has been guilty of any fraud or who had knowledge or reasonable grounds to know of any fraud, or who has not acted honestly and in good faith shall be entitled to any of the benefits of said section.[41]

§ 35. Limitations.

Not more than one lease shall be granted under said section to any one person, association or corporation.[42]

§ 36. Limitation on Number of Leases to One Person.

No person, association, or corporation, except as provided in the act, shall take or hold at one time, more than three oil or gas leases, granted thereunder in any one state, and not more than one lease within the geological structure of the same producing oil or gas field.[43]

§ 37. Corporations.

No corporation shall hold any interest as a stockholder of another corporation in more than such number of leases; and no person or corporation shall take or hold any interest or interests as a member of an association or associations or as a stockholder of a corporation or corporations holding a lease under the provisions of the act, which, together with the area embraced in any direct holding of a lease under this act, or which, together with any other interest or interests, as a member of an association or associations or as a stockholder of a corporation or corporations holding a lease under the provisions of the act, for any kind of mineral leased under the provisions of the act, exceeds in the aggregate an amount equivalent to the maximum number of acres of the respective kinds of mineral allowed to any one lessee under this act.[44]

§ 38. Forfeiture.

Any interests held in violation of the act shall be forfeited to the United States by appropriate proceedings instituted by the attorney general for that purpose in the United States district court for the district within which the property, or some part thereof, is located.[45]

§ 39. Exceptions.

Any ownership or interest forbidden in the act which may be acquired by descent, will, judgment, or decree may be held for two years and not longer after its acquisition.[46]

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[41] 2 Supp. U. S. Comp. St. p. 1414, § 4640¾*k* (§ 21). See note 31, *supra*.

[42] Id. See § 36, *infra*. The limitation contained in section 21 of the act relating to the deposits of oil shale belonging to the United States prevents a lessee thereunder from taking and holding directly more than one lease, irrespective of whether the leased area is one state or another. The limitations contained in section 27 of said act in respect to any kind of mineral leased under that act, are applicable to an oil shale lease, and consequently no person or corporation can take and hold, either directly or indirectly, any interest or interests in oil shale deposits in an area or areas exceeding in the aggregate the equivalent of five thousand one hundred and twenty acres. Limitations Respecting the Leasing of Oil Shale Deposits. 48 L. D. 635. For regulations concerning oil shale leases, see 47 L. D. 424.

[43] 2 Supp. U. S. St. p. 1417, § 4640¾*n* (§ 27). See *supra*, § 35.

[44] Id.

[45] Id. See § 46, *infra*.

[46] Id.

§ 40. Lawful Combinations.

Nothing contained in the act shall be construed to limit sections 18,[47] 18a,[48] 19,[49] and 22[50] of the act or to prevent any number of lessees under the provisions of the act from combining their several interests so far as may be necessary for the purposes of constructing and carrying on the business of a refinery, or of establishing and constructing as a common carrier a pipe line, or lines of railroads to be operated and used by them jointly in the transportation of oil from their several wells, or from the wells of other lessees under the act.[51]

§ 41. Approval of Combination.

Any combination for such purpose or purposes shall be subject to the approval of the Secretary of the Interior on application to him for permission to form the same.[52]

§ 42. Unlawful Combinations.

If any of the lands or deposits leased under the provisions of the act shall be subleased, trusteed, possessed, or controlled by any device permanently, temporarily, directly, indirectly, tacitly, or in any manner whatsoever, so that they form a part of, or in any wise controlled by any combination in the form of an unlawful trust, with consent of lessee, or form the subject of any contract or conspiracy in restraint of trade in the mining or selling of oil, oil shale or gas entered into by the lessee, or any agreement or understanding, written, verbal or otherwise to which such lessee shall be a party, of which his or its output is to be or become the subject to control the price or prices thereof or of any holding of such lands by any individual, partnership, association, corporation or control in excess of the amounts of lands provided in the act, the lease shall be forfeited by appropriate court proceedings.[53]

§ 43. Rights of Way for Pipe Lines.

Rights of way through the public lands, including the forest reserves, of the United States are granted by the act for pipe line purposes for the transportation of oil or natural gas to any applicant possessing the qualifications provided in section 1 of the act[54] to the extent of the ground occupied by said pipe line and twenty-five feet on each side of the same under such regulations as to survey, location, application, and use as may be prescribed by the Secretary of the Interior and upon the express condition that such pipe lines shall be constructed, operated, and maintained as common carriers.[55]

§ 44. Reservations and Conditions.

The act provides that the government shall in express terms reserve and shall provide in every lease of oil lands under the act that the

[47] 2 Supp. U. S. Comp. St. p. 1411, § 4640¼*i*.
[48] 2 Supp. U. S. Comp. St. p. 1413, § 4640¼*ii*.
[49] Id.
[50] 2 Supp. U. S. Comp. St. p. 1415, § 4640¼*kk*.
[51] 2 Supp. U. S. Comp. St. p. 1417, § 4640¼*n* (§ 27).
[52] Id.
[53] Id.
[54] 2 Supp. U. S. Comp. St. p. 1418, § 4640¼*nn* (§ 28).
[55] Id.

lessee, assignee, or beneficiary, if owner, or operator or owner of a controlling interest in any pipe line or of any company operating the same which may be operated accessible to the oil derived from lands under such lease, shall at reasonable rates and without discrimination accept and convey the oil of the government or of any citizen or company not the owner of any pipe line, operating a lease or purchasing gas or oil under the provisions of the act.[56]

§ 45. Limitation of Grant of Right of Way.

No right of way shall hereafter be granted over said lands for the transportation of oil or natural gas except under and subject to the provisions, limitations, and conditions of section 28 of the act.[57]

§ 46. Forfeiture of Pipe Line Rights.

Failure to comply with the provisions of section 28 of the act or the regulations prescribed by the Secretary of the Interior shall be ground for forfeiture of the grant by the United States district court for the district in which the property, or some part thereof, is located in an appropriate proceeding.[58]

§ 47. Reservation of Easements.

Any permit, lease, occupation, or use permitted under the act shall reserve to the Secretary of the Interior the right to permit upon such terms as he may determine to be just, for joint or several use, such easements or rights of way, including easements in tunnels upon, through, or in the lands leased, occupied or used as may be necessary or appropriate to the working of the same, or of other lands containing the deposits described in the act, and the treatment and shipment of the products thereof by or under authority of the government, its lessees, or permittees, and for other public purposes.[59]

§ 48. Disposal of Surface Land.

The Secretary of the Interior, in his discretion, in making any lease under the act, may reserve to the United States the right to lease, sell, or otherwise dispose of the surface of the lands embraced in such lease under existing law or laws hereafter enacted, in so far as said surface is not necessary for the use of the lessee in extracting and removing the deposits therein.[60]

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[56] 2 Supp. U. S. Comp. St. p. 1418, § 4640¼nn (§ 28).
[57] Id.
[58] Id. See § 38, *supra*.
[59] 2 Supp. U. S. Comp. St. p. 1418, § 4640¼o (§ 29).
[60] Id. In the case of Brennan, *supra*,[61] the Land Department held that lands embraced in a prospecting permit must be treated as valuable for oil and gas, although not within a designated oil or gas field; and applications to make homestead entries filed subsequent to the permit application must be made with a reservation of the oil and gas deposits under the act of July 17, 1914 (38 Stat. 509), and subject to the permittee's full right to develop the land without hindrance or liability to the entryman. Such also is the provision made in departmental instructions of October 6, 1920 (47 L. D. 474). This requirement is in the exercise of the discretionary power granted the Secretary of the Interior in the above subdivision of the Leasing Act. The only disposition which may be made of the surface of lands under lease, or under a prospecting permit which gives a right to a lease, is such disposal, under existing nonmineral land laws, as will preserve to the lessee, or permittee, free use of the surface in any manner necessary to the fullest compliance with his lease or permit. Such rights are reserved by the act of July 17, 1914, *supra*, in the expressed reservation of the right to prospect for, mine and remove the reserved deposits. The waiver of compensation required is not an alteration or enlargement of the terms of the said act, as the only provisions requiring reimbursement of an entryman for damage to his crops and improvements appear in section 2 of said act, and clearly relate to

§ 49. Determination of Reservation.

If such reservation is made it shall be so determined before the offering of such lease.[61]

§ 50. Issuance of Permits for Easements.

The Secretary of the Interior is authorized to issue such permits for easements provided under the act to be reserved.[62]

§ 51. Assignment And Subletting.

No lease issued under the authority of the act shall be assigned nor sublet except with the consent of the Secretary of the Interior.[63]

§ 52. Relinquishment of Rights.

The lessee may, in the discretion of the Secretary of the Interior, be permitted at any time to make written relinquishment of all rights under such a lease, and upon acceptance thereof be thereby relieved of all future obligations under said lease, and may with like consent surrender any legal subdivision of the area included within the lease.[64]

§ 53. Diligence, Skill, and Care.

Each lease shall contain provisions for the purpose of insuring the exercise of reasonable diligence, skill and care in the operation of said property.[65]

§ 54. Safety and Welfare of Miners. Waste.

Each lease shall contain a provision that such rules for the safety and welfare of the miners and for the prevention of undue waste as

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entrymen whose claims antedate the initiation of a right to prospect for minerals and to preexisting mineral entries. The practice of requiring an express waiver of claim to compensation for damage to the crops and improvements by a subsequent entryman merely is an administrative means of fully informing such entryman of the extent of his rights under said entry if it is allowed as authorized by the section of the Leasing Act. Pace vs. Carstarphen, 50 L. D. 369.

This subdivision of the Land Leasing Act modifies that portion of section 9 of the Stock Raising Act which requires compensation for damages to the crops and improvements of the entryman resultant from the prospecting for the reserved mineral deposits, as to stock raising homestead entries allowed pursuant to such subdivision. Carlin vs. Cassriel, 50 L. D. 383. A state selection for lands embraced within an oil and gas prospecting permit can not be allowed prior to the cancellation of the permit and notation of its cancellation upon the records of the local land office, except upon the consent of the selector to take subject to the provisions of the act of July 17, 1914 (38 Stat. 509), and to the right of the permittee to the use of the surface in accordance with the provisions of section 29 of the act of February 25, 1920. New Mexico vs. Weed, *supra*.[(15)]

[61] 2 Supp. U. S. Comp. St. p. 1418, § 4640¼*o* (§ 29).

[62] Id.

[63] 2 Supp. U. S. Comp. St. p. 1419, § 4640¼*oo* (§ 30). See Hopkins, *supra*.[(12)]

[64] Id. The purchase of a relinquishment, together with the improvements of one who has made an unrestricted homestead entry, does not vest in the purchaser any rights that will interfere with the allowance of an oil and gas prospecting permit under section 13, pursuant to an application that was pending when the relinquishment was executed. A purchaser of a relinquishment executed during the pendency of an oil and gas prospecting permit application by one who made an unrestricted homestead entry only, and then only upon his consenting to the use by the permittee of so much of the surface of the land without compensation to the nonmineral entryman as shall be needed in extracting and removing the mineral deposits.

Relinquishments of entries run only to the United States and any payment by a third party for the relinquishment and the improvements on the land do not vest any rights in the purchaser. Musolf vs. Cowgill, 49 L. D. 186.

A relinquishment of an oil and gas prospecting permit does not, of its own force, relieve the lands from the segregative effect created by the permit, and the filing of an application for a permit, predicated upon the relinquishment, prior to the cancellation of the permit by the Commissioner of the General Land Office, and notation thereof upon the records of the local land office, does not confer upon the applicant any right to notice of the disposition of the prior existing claim, nor entitle him to any preference in the allowance of his application when the lands formally are restored. Craig, *supra*.[(15)]

[65] Id.

may be prescribed by said Secretary shall be observed, including a restriction of the workday to not exceed eight hours in any one day for underground workers except in case of emergency. Also a provision securing the workmen complete freedom of purchase. Also a provision requiring the payment of wages at least twice a month in lawful money of the United States.[66]

§ 55. Prohibiting the Employment of Minors and Females.

Each lease shall contain provisions prohibiting the employment of any boy under the age of sixteen or the employment of any girl or woman without regard to age in any mine below the surface.[67]

§ 56. Prevention of Monopoly.

Each lease may contain such other provisions as the Secretary of the Interior may deem necessary to insure the sale of the production of such leased lands to the United States and to the public at reasonable prices, for the protection of the interests of the United States, for the prevention of monopoly, and for the safeguarding of the public welfare.[68]

§ 57. State Laws.

None of the provisions in such lease shall be in conflict with the laws of the State within which the leased property is situated.[69]

§ 58. Forfeiture or Cancellation of Leases.

Any lease issued under the provisions of the act may be forfeited and cancelled by an appropriate proceeding in the United States district court for the district in which the property, or some part thereof, is located whenever the lessee fails to comply with any of the provisions of the act, of the lease, or of the general regulations promulgated under the act and in force at the date of the lease; and the lease may provide for resort to appropriate methods for the settlement of disputes or for remedies for breach of specified conditions thereof.[70]

§ 59. Rules and Regulations.

The Secretary of the Interior is authorized to prescribe necessary and proper rules and regulations and to do any and all things necessary to carry out and accomplish the purposes of the act.[71]

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[66] 2 Supp. U. S. Comp. St. p. 1419, § 4640¼*oo* (§ 30).

[67] Id.

[68] Id.

[69] Id.

[70] 2 Supp. U. S. Comp. St. p. 1419, § 4640¼*p* (§ 31). The provision to the effect that an oil and gas lease may provide for the resort to appropriate methods for the settlement of disputes or for remedies for breach of specific conditions thereof, has particular reference to issues arising between the lessor and the lessee, but disputed questions relating to the disposition of proceeds accruing from drilling operations and remaining after the payment of royalties to the United States, come exclusively within the jurisdiction of the courts. Heirs of Baker vs. Central Wyoming Co. (on petition), 49 L. D. 634. The courts, not the Land Department, have jurisdiction to determine questions pertaining to actual physical possession of lands in cases arising from conflicts between claimants under the acts of July 17, 1914 (Stock-Raising Homestead Act) (38 Stat. 509), and February 25, 1920 (Leasing Act) (2 Supp. U. S. Comp. St. p. 1404, § 4640¼ *et seq.*).

[71] 2 Supp. Comp. St. p. 1420, § 4640¼*pp* (§ 32). It is the policy of the Land Department to allow claimants of public land opportunity to be heard, notwithstanding they may have, through mistake, inadvertence, or even laches, clearly forfeited their right to a hearing under the Rules of Practice, unless it appears from the record, with reasonable clearness, that they have no substantial claims to equitable consideration. Cassidy vs. Hall, 50 L. D. 363; but see Bojorques vs. Heihn, 50 L. D. 165.

§ 60. Boundary Lines.

The Secretary of the Interior is authorized to fix and determine the boundary lines of any structure, or oil or gas field, for the purposes of the act.[72]

§ 61. State Rights.

Nothing in the act shall be construed or held to effect the rights of the state or other local authority to exercise any rights which they may have, including the right to levy and collect taxes upon improvements, output or mines, or other rights, property, or assets of any lessee of the United States.[73]

§ 62. Verifications.

All statements, representations, or reports required by the Secretary of the Interior under the act shall be upon oath, unless otherwise specified by him, and in such form and upon such blanks as he may require.[74]

§ 63. Reserved Deposits.

The provisions of the act apply to all deposits of oil, oil shale, or gas in the lands of the United States, which lands have been or may be disposed of under laws reserving to the United States such deposits with the right to prospect for, mine and remove the same, subject to such conditions as are or may hereafter be provided by such laws reserving such deposits.[75]

§ 64. Disposition of Moneys Received.

Ten per centum of all money received from sale, bonuses, royalties, and rentals under the provisions of the act, excepting those from Alaska, shall be paid into the treasury of the United States and credited to miscellaneous receipts; for the past production 70 per centum, and from future production 52½ per centum of the amounts derived from such bonuses, royalties, and rentals shall be paid into, reserved, and appropriated as a part of the reclamation fund created by the act of congress, known as the Reclamation Act, approved June 17, 1902, and for the past production 20 per centum and for future production 37½ per centum of the amounts derived from such bonuses, royalties and rentals shall be paid by the Secretary of the Treasury after the expiration of each fiscal year to the state within the boundaries of which the leased lands or deposits are or were located.[76]

§ 65. Expenditures by State.

Said moneys to be used by such state or subdivision thereof for the construction and maintenance of public roads or for the support of public schools or other public educational institutions, as the legislature of the state may direct.[77]

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[72] 2 Supp. Comp. St. p. 1420, § 4640¼*pp* (§ 32). See note 43, *infra*.
[73] Id. For a construction of this provision as to state rights, see Mid-Northern Oil Co. vs. Walker, 65 Mont. 414, 211 Pac. 353.
[74] 2 Supp. U. S. Comp. St. p. 1420, § 4640¼*qq* (§ 33).
[75] 2 Supp. U. S. Comp. St. p. 1420, § 4640¼*qq* (§ 34).
[76] 2 Supp. U. S. Comp. St. p. 1420¼*r* (§ 35).
[77] Id.

§ 66. Miscellaneous Receipts.

All moneys which may accrue to the United States under the provisions of the act from lands within the naval petroleum reserves shall be deposited in the treasury as "miscellaneous receipts."[78]

§ 67. Royalty Payable in Kind on Demand.

All royalty accruing to the United States under any oil or gas lease, or permit under the act on demand of the Secretary of the Interior shall be paid in oil or gas.[79]

§ 68. Advertising Sales of Royalty Oil and Gas.

Upon granting any oil or gas lease, under the act, and from time to time thereafter, during said lease, the Secretary of the Interior shall, except whenever in his judgment it is desirable to retain the same for the use of the United States, offer for sale for such period as he may determine, upon notice and advertisement on sealed bids or at public auction, all royalty oil and gas accruing or reserved to the United States under such lease.[80]

§ 69. Rejection of Bids.

Such advertisement and sale shall reserve to the Secretary of the Interior the right to reject all bids whenever within his judgment the interest of the United States demands.[81]

§ 70. Readvertising. Private Sale.

In cases where no satisfactory bid is received or where the accepted bidder fails to complete the purchase, or where the said secretary shall determine that it is unwise in the public interest to accept the offer of the highest bidder, the said secretary, within his discretion, may readvertise such royalty for sale, or sell at private sale at not less than the market price for such period, or accept the value thereof from the lessee. Pending the making of a permanent contract for the sale of any royalty, oil or gas as herein provided, the said secretary may sell the current product at private sale, at not less than the market price.[82]

§ 71. Sale to United States Departments or Agencies.

Any royalty, oil or gas may be sold at not less than the market price at private sale to any department or agency of the United States.[83]

ALASKA OIL PROVISO.

[§ 72–§ 78, inclusive.]

§ 72. Prospecting Permits.

In the Territory of Alaska prospecting permits not more than five in number may be granted to any qualified applicant for periods not exceeding four years, actual drilling operations shall begin within two years from date of permit, and oil and gas wells shall be drilled

[78] 2 Supp. U. S. Comp. St. p. 1240¾r (§ 35).
[79] 2 Supp. U. S. Comp. St. p. 1421, § 4640¾rr (§ 36).
[80] Id.
[81] Id.
[82] Id.
[83] Id.

to a depth of not less than five hundred feet, unless payable deposits of oil or gas shall be sooner discovered, within three years from date of permit and to an aggregate depth of not less than two thousand feet unless valuable deposits of oil or gas shall be sooner discovered, within four years from date of permit.[84]

§ 73. Preference Right.

In said territory the applicant shall have a preference right over others to a permit for land identified by temporary monuments and notice posted on or near the same for six months following such marking and posting, and upon receiving a permit he shall mark the corners of the tract described in the permit upon the ground with substantial monuments within one year after receiving such permit.[85]

§ 74. Prospecting Permits or Leases on Withdrawn Lands.

Any *bona fide* occupant or claimant of oil or gas-bearing lands within the Territory of Alaska, who, or whose predecessors in interest prior to withdrawal had complied otherwise with the requirements of the mining laws, but had made no discovery of oil or gas in wells and who prior to withdrawal had made no substantial improvements for the discovery of oil or gas on or for each location or had prior to the passage of this act expended not less than two hundred and fifty dollars in improvements on or for each location shall be entitled, upon relinquishment or surrender to the United States within one year from the date of the act, or within six months after final denial or withdrawal of application for patent, to a prospecting permit or permits, lease or leases, under this act covering such lands, not exceeding five permits or leases in number and not exceeding an aggregate of one thousand two hundred and eighty acres in each.[86]

§ 75. Rental and Royalties.

Leases in Alaska under the act whether as a result of prospecting permits or otherwise shall be upon such rental and royalties as shall

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[84] 2 Supp. U. S. Comp. St. p. 1410, § 4640¼*g* (§ 13).

[85] Id. For regulations relating to the exceptionally liberal provisions with respect to Alaska, see Oil Prospecting Permits in Alaska, 48 L. D. 46. For regulations governing oil and gas permits in Alaska under the act, see 49 L. D. 207, 801. For extension of time for drilling operations, see 2 Supp. U. S. Comp. St. p. 1410, § 4640¼*fff* (act of Jan. 11, 1922, c. 28); Oil and Gas Permits, 49 L. D. 110. For extension to the Territory of Alaska of the principles of the surface homestead acts already in force in the public land states, namely, the acts of March 3, 1909 (35 Stat. 844), June 22, 1910 (36 Stat. 583), and July 17, 1914 (38 Stat. 509), see act of March 8, 1922 (42 Stat. 415), entitled "An act to provide for agricultural entries on coal lands in Alaska." This act provides that, upon the unreserved withdrawn public lands in the Territory of Alaska, homestead claims may be initiated by actual settlers on public lands which are known to contain workable coal, oil, or gas deposits, or which may be, in fact, valuable for the coal, oil or gas contained therein. Thus, by the class last named, provision is made for cases in which land is not at the date of the initiation of the claim thereto actually known to contain workable coal, oil, or gas deposits, but in which it becomes known, during the interval between the initiation of the claim and its completion, that the land is, in fact, valuable for the coal, oil or gas contained therein. It also provides that homestead claims so initiated may be perfected under the appropriate public land laws and that, upon satisfactory proof of full compliance with these laws, the claimant shall be entitled to patent for the lands entered by him, which patent shall contain a reservation to the United Staes of all the coal, oil or gas in the land patented, together with the right to prospect for, mine, and remove the same.

For instructions relating to the acquisition of title to public lands in the Territory of Alaska, see 50 L. D. 27 and 96. See, also, Identification of Lands in Alaska, 50 L. D. 155.

[86] 2 Supp. U. S. Comp. St. p. 1415, § 4640¼*kk* (§22).

be fixed by the Secretary of the Interior and specified in the lease, and be subject to readjustment at the end of each twenty-year period of the lease.[87]

§ 76. Waiver of Rental or Royalty.

For the purpose of encouraging the production of petroleum products in Alaska the Secretary may in his discretion, waive the payment of any rental or royalty not exceeding the first five years of any lease.[88]

§ 77. Fraud.

No claimant for a lease who has been guilty of any fraud or who had any knowledge or reasonable grounds to know of any fraud, or who has not acted honestly and in good faith, shall be entitled to any of the benefits of this section (22 of the act).[89]

§ 78. Disposition of Moneys Received.

The payment of 37½ per centum of the amounts derived from certain bonuses, royalties and rentals by the United States to the state within the boundaries of which leased lands or deposits are or were located does not extend to Alaska.[90]

§ 79 Disposition of Oil, Oil Shale and Gas.

The deposits of oil, oil shale and gas referred to in the act, in lands valuable for such minerals, shall be subject except as to valid claims existent at the date of the passage of this act to disposition only in the form and manner provided for in said act and thereafter maintained in compliance with the laws under which initiated, which claims may be perfected under such laws, including discovery.[91]

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[87] 2 Supp. U. S. Comp. St. p. 1415, § 4640¼*kk* (§ 22).

[88] Id.

[89] Id. See note 31, *supra*.

[90] 2 Supp. U. S. Comp. St. p. 1420, § 4640¼*r* (§ 35).

[91] 2 Supp. U. S. Comp. St. p. 1421, § 4640¼*r* (§ 37). The term "valid claims" as used in this section relates to unperfected claims to mineral lands. Utah vs. Lichliter (on rehearing), 50 L. D. 231. In view of said provisions, no oil placer mining claims can be passed to patent under the provisions of the placer mining laws unless (a) it shall be shown to have been supported at the date of the Leasing Act by a sufficient discovery; or (b) discovery being at that time absent, it shall be established that work leading to discovery was then being diligently prosecuted by or for the claimants thereof and thereafter diligently continued to discovery. See section 32 of the Land Office Regulations of March 11, 1920, as amended to October 29, 1920 (47 L. D. 462), issued under the Leasing Act. Nor, in the absence of a similar showing, can an unperfected oil placer mining claim not entitled to be made the basis for relief under the sections 18, 18*a* or 19 of the Leasing Act because of the filing of application for relief, be successfully set up to defeat an application for permit or lease under the act. McGee vs. Wooten, *supra*.[(15)] Valid claims for oil shale which were existent at the date of the Leasing Act and thereafter duly maintained, are excepted from the operation of that statute, and may be perfected under the laws under which the claims were initiated. Utah vs. Watson Oil Co., *supra*.[(25)]

In Hodson vs. Midwest Oil Co., 297 Fed. 273, the court said: "The situation presented here also raises the same question which has been before this court in cases recently decided, as to whether or not the Interior Department has the exclusive jurisdiction under the act of February 25, 1920, to determine the matter of granting the leases to owners of placer mining claims upon application under that act. This court held in Hodson vs. Mt. & Gulf Oil Co., 297 Fed. 269, that when the Department of the Interior has recognized the ownership of a Placer Mining Act claim for the purpose of granting a lease to the owner or owners of said claim, such action is final, unless set aside on account of fraud, jurisdictional irregularities, or errors of law upon which the decision was based. Even these cases could not be asserted in an action at law.

"It is asserted in the plaintiff's petition that the Federal Leasing Act is unconstitutional, in that it is in contravention of the 'due process' clause of the constitution. In this manner, by one sweeping averment in his petition, the plaintiff would wipe out the statute upon which rests the right of his opponent. * * * The contention in the petition seems to be that the legislation is retroactive in that it purports to affect property rights already vested, and counsel argues that the act itself in no way pro-

§ 80. Fees and Commissions.

Until otherwise provided, the Secretary of the Interior shall be authorized to prescribe fees and commissions to be paid registers and receivers of United States land offices on account of business transacted under the provisions of the act.[92]

MISCELLANY.

§ 81. The Act of March 4, 1923—Oklahoma,

Providing for the disposition of oil and gas deposits in lands of the United States south of the medial line of Red River in Oklahoma did not contemplate the recognition of any equities asserted under the Leasing Act, but only those persons who were claiming and possessing lands within that area, in good faith, under color of some legal right, and had made *bona fide* expenditures in development of the lands for oil and gas with reasonable diligence prior to the passage of the Leasing Act, are entitled to equitable consideration.[93]

§ 82. Trespass.

In Mason vs. U. S.[94] the court holds that the measure of damages for oil trespass is within the controlling scope of state legislation and the court stated: "Here, while the suit is one in equity, the statute and decisions relied upon have nothing to do with the general principles of equity jurisdiction, but simply establish a measure of damages applicable to actions at law and suits in equity. In consonance with that decision the Land Department has directed that in cases of oil trespasses on the public domain if there is no state law governing such trespasses, the measure of damages will be as follows: (1) Innocent trespass. Value of oil taken, less amount of expense

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vides methods of giving notice to those parties claiming an interest in lands affected by the legislation.

"Whatever may be the character of right secured by a placer mining claimant, it is not that certain, indefeasible right which comes from a grant of title ownership, but depends at all times upon certain acts to be continuously performed by the claimant, the fee title remaining in the United States, unless the claimant proceed to patent. In the latter proceeding, rights in such a claim may be irrevocably cut off, in which the due process is based upon a published notice. Golden Reward Co. vs. Buxton Co., 79 Fed. 868. While the Leasing Act itself does not provide for notice, it in effect gives the Interior Department the right to prescribe rules and regulations to carry the act into effect. Such rules and regulations were prescribed by the Land Department requiring notice to be given of all applications for leases, which regulations should be given full force and effect of statutes, when not inconsistent with nor repugnant to the law itself. U. S. vs. Moorehead, 243 U. S. 607; Leonard vs. Lennox, 181 Fed. 760; Williamson vs. U. S., 207 U. S. 425.

"Plaintiff further contends that, being the owner of a claim maintained and perfected in accordance with the requirements of the Placer Mining Act, he and his colocators have the absolute right to proceed under the provisions of that act in the maintenance and operation of the mining claim, as well as proceeding to patent thereunder, without interference through any provisions of the Leasing Act. This contention would undoubtedly be sound were it not that the Leasing Act, in section 37 (Comp. St. Ann. Supp. 1923, § 4640¼s), apparently gives the option to such a claimant to proceed under either act. This seems to be the only practicable construction of section 37, which, if correct, gives the department the undoubted right under due process regulations to call before it any person or persons claiming an interest in an entry upon which a lease is sought. Upon such a hearing the rights of the parties can be fully determined." "Paper locations" of oil and gas lands unaccompanied by discovery therein are not within the excepting clause of this section although the annual assessment work has been performed each year thereon. Mt. States Co. vs. Taylor, 50 L. D. 348.

[92] 2 Supp. U. S. Comp. St. p. 1321, § 4640¼ss (§ 38).

[93] Red River Syndicate (on petition), 49 L. D. 669; see, also, Oklahoma vs. Texas, 258 U. S. 574; Martin, 48 L. D. 277. For rule establishing boundaries in accordance with the decision of the Supreme Court in the case of Oklahoma vs. Texas, see 50 L. D. 216.

[94] 260 U. S. 545; see Central Co. vs. Penny, 173 Fed 340; Instructions, 49 L. D. 484.

incurred in taking the same. (2) Wilful trespass. Value of oil taken without credit or deduction for the expense incurred by the wrongdoers in getting it.

§ 83. Recorded Notice Ineffective.

The rules relating to notices of *lis pendens* that are applicable under a state law have no effect in land office proceedings and recordation in the office of the county recorder in which the lands are situate, of proceedings in a local land office, there being no statutory requirement to that effect, neither constitutes constructive notice nor raises a presumption of notice. Persons seeking information should go to the records of the Land Department to obtain it.[95]

§ 84. Annual Assessment Work Within Withdrawn Areas.

A claimant to public land who has done all that is required under the law to perfect his title acquires rights against the government, and his right to a legal title is to be determined as of that time, on the theory that, by virtue of his compliance with the requirements, he has an equitable title to the land, and that the government holds it in trust for him.[96] But the possession of a mining claim where the statutory requirements have not been complied with is subject to be terminated by the government under some law of congress authorizing the disposal of the public lands.[97] In other words, if there was, at the time of the withdrawal, a valid claim, said claim is unaffected by the withdrawal so long as it is maintained in accordance with the law under which it was initiated.[98]

It follows that a valid unpatented mining claim located before the passage of the Leasing Act, and containing mineral of the character enumerated in said act, must be kept alive by the performance of the annual assessment work, within the assessment year although, possibly, the commencement of such work on, say, the last day of such year and diligently prosecuting the same to completion within the succeeding year may prevent forfeiture;[99] or, by application for patent, within which

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[95] Opinion, 50 L. D. 199. Where an application for a permit is filed in good faith for lands shown by the records of the local land office to be free from conflicting claims, such application constitutes a bar to the amendment of subsisting permit applications, although based upon location notices posted upon the land, if there were no apparent error in those applications when filed. A location notice, posted as prescribed by the act, has a segregative effect for a period of thirty days only, and when an application for a permit is filed the application becomes the notice to all applicants that the land described therein is adversely claimed and can not be amended after the expiration of the thirty-day period to conform to the description posted, in the presence of a *bona fide* intervening claim. Neither the act nor the Departmental Regulations issued pursuant thereto make distinction between surveyed and unsurveyed lands as to preference rights initiated under the provisions of the act by the posting of location notices, except that greater particularly is required in the description of lands of the latter class. Wagner vs. Coffin, *supra*.[(18)]

[96] Payne vs. New Mexico, *supra*[(12)]; see, also, Payne vs. C. P. R. Co., *supra*[(12)]; Interstate Oil Corp., 50 L. D. 262.

[97] McKenzie vs. Moore, 20 Ariz., 176 Pac. 569. Where a claimant is in default so that his claim could be defeated by another individual adverse claimant, surely the government, desiring to devote the land to an important public use, may likewise take advantage of the default and divest the claim so as to free the land for government use. Kinney, 44 L. D. 580; Interstate Oil Corp., *supra*.[(96)]

[98] Interstate Oil Corp., *supra*.[(96)]; see, also, Robbins vs. Elk Basin Co. *supra*.[(15)]

[99] Willits vs. Baker, 133 Fed. 937; see, also, Anderson vs. Robinson, 63 Or. 228, 126 Pac. 988, 127 Pac. 546. See, also, note 96, *supra*. The mere staking of a mining claim, posting and recording notice, and doing the annual assessment work thereon is not sufficient to confer title upon its claimant. Union Oil Co. vs. Smith, 249 U. S. 237; Cole vs. Ralph, *supra*[(9)]; U. S. vs. Midway Northern Oil Co., *supra*[(3)]; U. S. vs. Thirty-Two Oil Co., 736. The annual assessment work upon oil lands may be done upon any one of a group of such claims or locations lying contiguous and owned by the same person or corporations not exceeding five claims in all; provided, that said labor will tend to the development or to determine the oil-bearing character of such contiguous claims. See Smith vs. Union Oil Co., 166 Cal. 217, 135 Pac. 967; affirmed in Union Oil Co. vs. Smith, *supra*.

final entry has been made.[100] Else the land embraced within the location will revert to the government. There can not be either resumption of work or relocation of such a mining claim.[101]

[100] Annual assessment work is not required to be made after the final entry in the local land office on the theory that the government parts with the property upon such entry, though the title remains in it until the patent in fact, is issued, as the right to the patent immediately arises upon payment of the price of the land and a mere delay in the administration of the Land Department will not defeat nor diminish the right of the purchaser. Benson Co. vs. Alta Co., 145 U. S. 425; Brown vs. Gurney, 201 U. S. 184; Neilson vs. Champagne Co., 111 Fed. 657; Cranes Gulch Co. vs. Scherrer, 134 Cal. 353, 66 Pac. 487; Southern Cross Co. vs. Sexton, 147 Cal. 758, 82 Pac. 483; Batterton vs. Douglass Co., 20 Ida. 760, 120 Pac. 827.

[101] See U. S. vs. McCutchen, *supra* (3); see, also, note 97, *supra*.

APPENDIX.

REGULATIONS CONCERNING OIL AND GAS PERMITS AND LEASES (INCLUDING RELIEF MEASURES) AND RIGHTS OF WAY FOR OIL AND GAS PIPE LINES.*

* U. S. General Land Office: Circular No. 672, Oct. 29, 1920.

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(Of Circular No. 672.)

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OIL AND GAS REGULATIONS.

DEPARTMENT OF THE INTERIOR,
GENERAL LAND OFFICE,
Washington, D. C., March 11, 1920

REGISTERS AND RECEIVERS,
UNITED STATES LAND OFFICES.

SIRS: Under the authority of the act of congress approved February 25, 1920, entitled "An act to promote the mining of coal, phosphate, oil, oil shale, gas, and sodium on the public domain," the following rules and regulations are prescribed for the administration of the provisions of said act relative to oil and gas:

I. OIL AND GAS PERMITS.

Section 13 of the act authorizes the Secretary of the Interior to grant a qualified applicant the exclusive right to prospect for oil or gas for the period of two years, unless extended, and under authority thereof the following rules and regulations will govern the issuance of such permits:

1. QUALIFICATIONS OF APPLICANTS.—Pursuant to section 1 of the act, permits may be issued to (*a*) a citizen of the United States; (*b*) an association of such citizens; (*c*) a corporation organized under the laws of the United States or of any state or territory thereof; or (*d*) a municipality.

2. LANDS TO WHICH APPLICABLE.—The permit thus issued may include not more than 2560 acres of land wherein such deposits belong to the United States and are not within any known geological structure of a producing oil or gas field, the lands applied for to be taken in a reasonably compact form, by legal subdivisions if surveyed, and in an approximately square or rectangular tract if unsurveyed, the length of which must not exceed two and one-half times its width. Incontiguous tracts within a limited radius may be included in a permit when conditions are such that, because of prior disposals, a reasonable area of contiguous land can not be procured.

Such permits may not include land or deposits in (*a*) national parks; (*b*) forests created under the act of March 1, 1911 (36 Stat., 961), known as the Appalachian Forest Reserve act; (*c*) lands in military or naval reservations; or (*d*) Indian reservations. The application of the act to ceded Indian lands depends on the laws controlling their disposition.

See Harrison, 49 L. D. 139; Instructions 49 L. D. 431.

All permits or leases for the exploration for or development of oil or gas deposits under this act within the limits of national forests or other reservations or withdrawals to which this act is applicable shall be subject to and contain such conditions, stipulations, and reservations as the Secretary of the Interior shall deem necessary for the protection of such forests, reservations, or withdrawals, and the uses and purposes for which created.

The boundaries of the geological structures of producing oil or gas fields will be determined by the United States Geological Survey, under the supervision of the Secretary of the Interior, and maps or diagrams showing same will be placed on file in local United States land offices.

It should be understood that under the act, the granting of a prospecting permit for oil and gas is discretionary with the Secretary of the Interior, and any application may be granted or denied, either in part or in its entirety, as the facts may be deemed to warrant.

3. Permits or Leases for Other Materials.—The granting of a permit or lease for the development or production of oil or gas will not preclude other permits or leases of the same land for the mining of other minerals, under this act, with suitable stipulations for such joint operation, to the end that the full development of the mineral resources may be secured, nor will it necessarily preclude the allowance of applicable entries, locations, or selections of the lands included therein with a reservation of the mineral deposits to the United States.

4. Form and Contents of Application.—Applications for permits should be filed in the proper district land office, addressed to the Commissioner of the General Land Office, be suspended for thirty days to enable preference-right claims to be presented before action, and after due notation then forwarded for his consideration, with a full report as to status and conflicts. No specific form of application is required, and no blanks will be furnished, but it should cover, in substance, the following points, and be under oath:

(*a*) Applicant's name and address.

(*b*) Proof of citizenship of applicant, by affidavit of such fact, if native born; or if naturalized, by a certified copy of the certificate of naturalization on the form provided for use in public-land matters, unless such a copy is already on file; if a corporation, by certified copy of the articles of incorporation, and a showing as to the residence and citizenship of its stockholders; if a municipality a showing of (1) the law or charter and procedure taken by which it has become a legal body corporate; (2) that the taking of a permit or lease is authorized under such law or charter; and (3) that the action proposed has been duly authorized by the governing body of such municipality.

(*c*) A statement that the applicant is not the holder of more than two other subsisting permits in the same state, nor of any permit in the same geologic structure, together with a statement of any other applications for permits in the same state, in which the applicant is directly or indirectly interested, fully disclosing the nature and extent of such interests. In this connection attention is directed to the limitations and exceptions of section 27 of the act.

(*d*) Description of the land for which the permit is desired, by legal subdivisions if surveyed, and by metes and bounds if unsurveyed, in which latter case, if deemed necessary, a survey sufficient more fully to identify the land may be required before the permit is granted. In order to properly identify unsurveyed lands, great care should be taken, and if practicable the metes and bounds descrip-

tion should be connected by course and distance with some corner of the public land surveys.

(*e*) A statement that to the best of applicant's knowledge and belief the land applied for is not within any known geological structure of a producing oil or gas field.

(*f*) Three references as to applicant's reputation and business standing.

(*g*) If the applicant is claiming a preference right as explained in the next succeeding section of these regulations, he should set up fully the facts upon which such preference right is based, together with a true copy of the posted notice.

(*h*) The applicant must furnish a bond, with qualified corporate surety, in the sum of $1,000, conditioned against the failure of the permittee to repair promptly, so far as possible, any damage to the oil strata or deposits resulting from improper methods of operation. The penalty of the bond may be increased by the Secretary of the Interior when conditions warrant, particularly in relief cases. This bond may be filed with the application, which will expedite action thereon, or within ten days after receipt of notice by the applicant that the permit will be granted when the bond is filed.

Additional bonds, or a bond with additional obligations therein, will be required in special cases where a permit embraces reserved deposits in lands theretofore entered or patented with a reservation of the oil and gas to the United States, together with a right to prospect for, mine, and remove the same pursuant to the act of July 17, 1914 (38 Stat., 509), or where the lands constitute a portion of a reclamation project.

See Craig, 50 L. D. 202.

A revenue stamp must be attached to the bond at the rate of 1 cent on each $1 or fractional part thereof of premium paid.

The following form of bond is prescribed for use in ordinary cases in connection with applications for permit:

BOND

DEPARTMENT OF THE INTERIOR.

GENERAL LAND OFFICE.

U. S. Land Office_____
Serial Number_____

Bond of oil and gas permittee.

[Act of February 25, 1920 (Public No. 146).]

Know all men by these presents, That we, _____ _____, of the county of _____, in the State of _____, as principal, and _____ _____ of the county of _____, in the State of _____, as surety, are held and firmly bound unto the United States of America in the sum of _____ dollars, lawful money of the United States to be paid to the United States, for which payment, well and truly to be made, we bind ourselves, and each of us, and each of our heirs, executors, administrators or successors, and assigns, jointly and severally by these presents.

Signed with our hands and sealed with our seals this _____ day of _____ in the year of our Lord one thousand nine hundred and _____.

The condition of the foregoing obligation is such that, whereas the said principal has made application under the act of February 25, 1920 (Public No. 146), for a permit to prospect for oil and gas for two years upon the following described lands _____; and whereas said permit, if granted, will be on condition that all operations shall be conducted in accordance with approved methods; that all proper

precautions shall be exercised to prevent waste of oil or gas developed in the lands, or the entrance of water through wells drilled by, or on behalf of, the principal to the oil sands or oil-bearing strata to the destruction of the oil deposits.

Now therefore, if said principal shall promptly repair any damage that may result to the oil strata or deposits resulting from improper methods of operation, or from failure to comply fully with the aforesaid conditions of said permit, then the above obligation is to be void and of no effect; otherwise to remain in full force and virtue.

Signed, sealed, and delivered in presence of

Name and address of witness:

------ ------ ------ ------ [L. S.]
Principal.

---------- ------ ------ [L. S.]
Surety.

------ ------

In lieu of corporate surety, the applicant may deposit United States bonds of the par value of not less than $1,000, pusuant to section 1320 of the act of February 24, 1919 (see Treasury Circular No. 154, of June 30, 1919). When United States bonds are submitted as security in lieu of corporate surety same should be accompanied with a bond and power of sale duly executed by the applicant in substantially the following form:

BOND.

Department of the Interior.

General Land Office.

U. S. Land Office------
Serial Number------

Bond of oil and gas permittee where United States bonds are accepted in lieu of surety or sureties, and power of attorney.

[Act of February 25, 1920 (Public No. 146).]

Know all men by these presents, That ------ of ------, State of ------, as obligor, is held and firmly bound unto the United States of America in the sum of $1,000, lawful money of the United States, to be paid to the United States, for which payment, well and truly to be made, binds himself, his heirs, executors, administrators, and assigns by these presents.

The condition of the foregoing obligation is such that whereas the said obligor has made application under the act of February 25, 1920 (Public No. 146), for a permit to prospect for oil and gas for two years upon the following described land: ----------; and

Whereas said permit, if granted, will be on condition that all operations shall be conducted in accordance with approved methods; that all proper precautions shall be exercised to prevent waste of oil or gas developed in the lands, or the entrance of water through wells drilled by or on behalf of the obligor to the oil sands or oil-bearing strata to the destruction of the oil deposits.

Now, therefore, if said obligor shall promptly repair any damage that may result to the oil strata or deposits resulting from improper methods of operation, or through failure to comply fully with the aforesaid conditions of said permit, then the above obligation is to be void and of no effect; otherwise to remain in full force and virtue.

The above-bounden obligor, in order the more fully to secure the United States in the payment of the aforesaid mentioned sum, hereby pledges as security therefor bonds of the United States in the principal sum of $1,000, which said bonds are numbered serially and are in the denominations and amounts and are otherwise more particularly described as follows:

------ bonds of $------ bearing ------ per cent interest with ------ coupons attached to each, numbered ------ which said bonds have this day been deposited with the Secretary of the Interior and his receipt taken therefor.

That the said obligor does hereby constitute and appoint the Secretary of the Interior as his attorney, for him and in his name to collect or to sell, assign and transfer the said United States bonds above described and deposited by the obligor as

aforesaid, pursuant to authority conferred by section 1320, of the revenue act of 1918, approved February 24, 1919, as security for the faithful performance of any and all of the conditions or stipulations as hereinbefore set out, and it is agreed that, in case of any default in the performance of the conditions and stipulations of such undertaking the said attorney shall have full power to collect said bonds or any part thereof, or to sell, assign, and transfer said bonds or any part thereof without notice, at public or private sale, free from any equity of redemption or without appraisement or valuation, notice and right to redeem being waived, and to apply proceeds of such sale or collection in whole or in part to the satisfaction of any damages, or deficiencies arising by reason of such default, as said attorney may deem best. The interest accruing upon said United States bonds deposited as above stated, in the absence of any default in the performance of any of the conditions or stipulations of the bond, shall be paid to said obligor. The said obligor hereby for himself, his heirs, executors, administrators, and assigns ratifies and confirms whatever his said attorney shall do by virtue of these presents.

In witness whereof I have hereunto set my hand and seal this _____ day of _____ 19__.

_____ _____ [L. S.]
Signature.

Before me, the undersigned, a notary public within and for the county of _____, in the State of _____, personally appeared _____ _____ and duly acknowledged the execution of the foregoing bond and power of attorney.

Witness my hand and notarial seal this _____ day of _____, 19__.

_____ _____

[Notarial Seal.]

5. Preference Right, How Secured.—A preference right over others to a permit may be obtained, under section 13 of the act, by

(*a*) Erecting upon the land desired, subsequent to the approval of the act, a monument not less than 4 feet high, at some conspicuous place thereon, of such a size as to be visible to anyone who may be interested. The monument may be of iron, stone, or durable wood, not less than 4 inches square or in diameter, and must be firmly embedded in the ground.

(*b*) Posting on or near said monument a notice stating that an application for permit will be made within 30 days after date of posting said notice, the notice to give the date and hour of posting, to be signed by the applicant, and give such a general description of the land to be covered by the permit, by reference to courses and distances from such monument and other natural objects and permanent monuments, as will reasonably identify the land. The area, approximately, must also be stated, and the notice must be so protected as to prevent its destruction by the elements. The preference right will exist for 30 days after the date of posting such notice, and if no application is filed within that time, the land will be subjected to any other application for permit or to other disposal.

(See Purvis vs. Witt, 49 L. D. 260; Blakesley vs. McCord, 49 L. D. 418.)

(*c*) In cases of conflict between a preference right application and one filed without any claim of preference, the priority of the initiation of the claim will govern; for example, the filing of a proper application in the land office prior to the posting of notice by another, as aforesaid, will give a prior right.

6. Form and Requirements of Permit.—A permit will confer upon the recipient the exclusive right to prospect for oil or gas upon the lands embraced therein, provided he complies with the terms thereof, which permit will be, in form and substance, substantially as follows:

PERMIT.

THE UNITED STATES OF AMERICA.

DEPARTMENT OF THE INTERIOR.

General Land Office.

U. S. Land Office_____
Serial Number_____

Know all men by these presents, That the Secretary of the Interior, under and by virtue of the act of Congress entitled "An act to promote the mining of coal, phosphate, oil, oil shale, gas, and sodium on the public domain," approved February 25, 1920, has granted and does hereby grant a permit to _____ _____ granting _____ the exclusive right for _____ years from date hereof to prospect for oil or gas, but for no other purpose, the following described lands: _____, upon the express conditions following:

1. To mark each of the corners of the claim within 90 days from date hereof with substantial monuments so that the boundaries can be readily traced on the ground, and post in a conspicuous place, upon the lands covered hereby, a notice that such a permit has been granted, and a description of the lands covered by this permit.

2. Within six months (two years in Alaska) from date hereof to install upon some portion of the lands a substantiel and adequate drilling outfit and to commence actual drilling operations.

3. Within one year (three years in Alaska) from date hereof to drill one or more wells, not less than 6 inches in diameter to a depth of at least 500 feet each, unless valuable deposits of oil or gas shall be sooner discovered.

4. Within two years (four years in Alaska) from date hereof to drill one or more wells to a depth of at least 2000 feet, unless valuable deposits of oil or gas shall be sooner discovered.

5. Not to drill any well within 200 feet of any of the outer boundaries of the lands covered by this permit unless the adjoining lands have been patented or the title thereto otherwise vested in private owners.

6. To carry on all operations hereunder in accordance with approved methods and practice; to use all reasonable precautions to prevent waste of oil or gas developed in the land, or the entrance of water through wells drilled by permittees to the oil sands or oil-bearing strata to the destruction or injury of the oil deposits, and to carry out, at the expense of the permittee, all reasonable orders of the Secretary of the Interior relative to prevention of waste and preservation of property, and to comply with such regulations as may be issued by the Secretary of the Interior as to methods of operation.

7. To furnish and maintain during the period of this permit a bond with qualified corporate surety in the sum of $_____, conditioned against the failure of the permittee to repair promptly, so far as possible, any damage to the oil strata or deposits resulting from improper methods of operation.

8. That as to any lands covered by this permit embraced at the date hereof in any entry or patent with a reservation of the oil and gas deposits to the United States pursuant to the act of July 17, 1914 (38 Stat. 509), or the act of December 29, 1916 (39 Stat. 862), permittee shall reimburse such entrymen or patentee for all damage to crops and improvements caused by drilling or other prospecting operations.

9. That this permit is granted upon the express condition that the right is reserved to the Secretary of the Interior to permit upon such terms as he may determine to be just, for joint or several use, such easements or rights of way, including easements in tunnels upon, through, or in the lands covered thereby, as may be necessary or appropriate to the working of the same, or of other lands containing the deposits described in the act under which this permit is granted.

10. This permit is granted on the express condition that if any of the land covered thereby is embraced in a forest, reclamation, power, or other withdrawal, or is segregated for any particular purpose, operations under this permit shall be so conducted as not to interfere with the administration and use of the land for the purpose for which withdrawn or segregated to a greater extent than may be determined by the Secretary of the Interior to be necessary for the most beneficial use of the land.

11. The granting of this permit shall not preclude the allowance of entry, location, or selection of any of the lands included therein, where such entry, selection, or location is made with a reservation of the mineral deposits to the United States.

12. That until this permittee shall apply for a lease of one-quarter or more of the area included herein, he shall pay to the United States 20 per cent of the gross

value of all oil or gas secured by him from the lands and sold or otherwise disposed of, or held by him for sale or other disposition.

13. The Secretary of the Interior reserves the right and authority to cancel this instrument for failure of the permittee to comply with any of the conditions enumerated herein or to exercise due diligence in the work of development.

14. Valid rights existing at the date of this permit will not be affected thereby.

Dated this _____ day of _____, 19__.

_____ _____,
Secretary of the Interior.

7. Extension of Life of Permit.—If for any good reason the permittee is unable, with the exercise of diligence, to test the land within two years, application for extension for not to exceed two years may be filed within the life of the permit, and must be accompanied by a showing under oath, corroborated, as to the causes that make such extension necessary, and as to what efforts have been made to comply with the condition of the permit; ordinarily no extension will be granted in the absence of the minimum amount of drilling required by the permit. This application should be addressed to the Secretary of the Interior, and be filed either in the district land office or in the General Land Office. This privilege is not applicable to Alaska.*

8. Reward for Discovery.—Upon establishing to the satisfaction of the Secretary of the Interior that valuable deposits of oil or gas have been discovered within the limits of the land embraced in the permit, within the period of the permit or extension thereof, the permittee is entitled (*a*) to a lease of one-fourth of the land included in the permit, on a royalty of 5 per cent, or for at least 160 acres if there be that area in the permit; (*b*) to a preference right to a lease for the remainder of the land covered by his permit at such royalty as may be fixed by the Secretary of the Interior, not less than 12½ per cent in amount or value of the production, nor more than the royalties fixed for leases under section 18 of the act (sec. 19, par. *c*, of these regulations), except that on that portion of the average production exceeding 200 barrels per day per well for the calendar month, the royalties shall be 33⅓ per cent for oil of 30 degrees Baume or over and 25 per cent for oil of less than 30 degrees Baume.*

9. Penalty for Default.—The permit will be subject to cancellation by the Secretary of the Interior for failure of the permittee to comply with any of the conditions enumerated therein or to exercise due diligence in the work of development.

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* Paragraphs 7 and 8 as amended on August 22, 1922, read as follows:

"*Extensions of Time.* The provision in section 13 of the act providing for extensions of the life of permits granted upon lands in the United States has been superseded by an act approved January 11, 1922 (42 Stat. 356), which provides that the Secretary of the Interior may, if he shall find that any oil or gas permittee has been unable, with the exercise of diligence, to begin drilling operations or to drill wells of the depth and within the time prescribed by section 13 of the act of congress approved February 25, 1920 (41 Stat. 427), extend the time for beginning such drilling or completing it to the amount specified in the act for such time, not exceeding three years, and upon such conditions as he shall prescribe. Extensions of time may be granted thereunder in proper cases, both in Alaska and the United States, where applications therefor are filed in accordance with the regulations, Circular No. 801, approved January 16, 1922, as amended March 28, 1922, and May 12, 1922 (49 L. D. 110).

"When an application for a lease of the one-fourth part of the area affected by a prospecting permit is submitted, supported by the requisite evidence of discovery and production of oil or gas, such application must be accompanied by further application by the permittee, or by an assignee of such permittee, for a lease of the remaining portion of the area described in the permit; or, in the alternative, a relinquishment of the permit and waiver of preference right in respect of such remaining area must be submitted." 49 L. D. 207. See 49 L. D. 110, 403.

In the absence of discovery of oil or gas within the period of the permit or extension thereof, the permit will thereupon terminate and the lands or deposits will automatically revert to their original status, but the land will continue segregated pending action by the Land Department on any application for extension that is timely filed.

(See Alger, 50 L. D. 201.)

10. PERMITS IN ALASKA.—The foregoing rules and regulations generally will apply to permits in Alaska, under section 13 of the act, but with some modifications, viz:

(Paragraphs 1 to 9, inclusive, apply to permits in Alaska, under section 13 of the act, with modifications set forth in 49 L. D. 208.)

(*a*) A person, association, or corporation is authorized to hold five permits at one time in said territory, but only one permit in the geologic structure of any one producing oil field; hence subdivision *c* of section 4 of these regulations should be modified accordingly in making application for permits for lands in Alaska under section 13 of the act.[1]

(*b*) The preference right treated under section 5 of these regulations extends for a period of six months after the erection of monument and posting of notice provided for therein, and the period for marking of the corners is extended to one year after the granting of the permit.

(*c*) The time for exploratory work in Alaska is four years, instead of two, and there is no provision for extension of such period. The various items necessary in this exploratory work are set forth in the form of permit herein provided, the Alaskan period being included in parentheses, after the period prescribed in the states.

11. PERMITS FOR RESERVED DEPOSITS.—The deposits of oil and gas in all lands for which a patent has issued with a reservation of the oil and gas to the United States, under the act of July 17, 1914 (38 Stat. 509), subject to the preference right, if any, explained in the next succeeding section hereof, may be included in a permit under the provisions of this act, conditioned upon the permittee filing with the Secretary of the Interior a satisfactory bond or undertaking as security for the payment of all damages to crops and improvements on such lands by reason of prospecting, as required by the said act. (See G. L. O. Circular No. 393, 44 L. D., 32.)

12. PREFERENCE RIGHT OF OWNER OF SURFACE.—Under section 20 of the act a preference right to a prospecting permit is given to an entryman or owner of land not claimed under any railroad grant, under the following conditions: (1) The entry must have been made prior to February 25, 1920; (2) the entry must have been bona fide under and pursuant to the act under which made; (3) the entry must have been made without a reservation of the oil and gas, for land unwithdrawn, not classified as oil and gas land, and not known to be valuable for its oil or gas deposits, at date of entry; (4) in case the entry is patented, it must have been with a reservation of the oil and gas to the government; if the entry is not patented, the entryman must waive all right *under the entry* to the oil and gas in the land; (5) if the entry has been assigned or transferred, such assignment or transfer must have been prior to January 1, 1918.

(*a*) Should an application for permit for entered or patented lands *with a reservation* of the oil and gas content to the United States be filed by a person other than the entryman or owner of the land, the applicant will be required to serve *personal notice* of such application upon the owner or owners of the land so entered or patented, with a warning therein that if said owner desires to exercise his preference right, if any, to a permit, he must file within 30 days his application therefor in the proper local land office. The applicant must furnish evidence of the service of notice on the owner and evidence that the party served is the owner of the land involved, either by his affidavit, duly corroborated, or by certificate of the officer in whose office transfers of real property are to be recorded.

(*b*) The preference-right applicant must show that he is entitled under the section above outlined, together with his qualifications, to hold a permit as previously set forth in these regulations, and if such an application be filed, the Secretary of the Interior will award the permit to the party entitled thereto.

(*c*) If the land, either withdrawn or unwithdrawn, is covered by an unpatented nonmineral entry *without a reservation* of the oil and gas content to the government, a prospecting permit may not be granted so long as the entry subsists without such reservation. In cases where applications for prospecting permits are filed by persons other than the entrymen for land in this status such applications will be referred to the United States Geological Survey for classification as to the prospective oil value of the land affected. If the Geological Survey shall conclude and report that the land embraced in such a nonmineral entry is without prospective oil or gas value, the application for permit will be rejected as to such land; but if the Geological Survey shall report that the land has a prospective oil or gas value and offers a favorable opportunity for prospecting operations, then the General Land Office will direct the proper local officers to serve notice on the nonmineral entryman to the effect that said land has been reported as valuable for its oil or gas content, and that the said entryman will be allowed fifteen (15) days within which (1) to file in the local office his consent to a reservation to the government of the oil and gas content of the land embraced in his entry and in which to exercise his preference right, if any, to a prospecting permit for said land by filing a proper application therefor, or (2) to show cause, if any there be, why he should not consent to the mineral reservation, failing in either of which his entry will be canceled without further notice. The local office will thereupon report the action taken to the commissioner, whereupon (1) if the nonmineral entryman shall have failed to take any action, order of cancellation of the nonmineral entry will be made and action taken on the prospecting permit accordingly; (2) if consent to the reservation shall have been filed, a prospecting permit will be granted to the entryman or the former applicant, as the case may be, for the reserved mineral deposits; (3) if the nonmineral entryman shall submit a showing why the entry should not be impressed with a reservation of the mineral to the government, such showing will be referred to the Geological Survey for consideration and report. If upon the receipt of such report the department shall conclude that

the land is without mineral value, the application for prospecting permit will be rejected; but if the department shall conclude that, notwithstanding the showing made by the entryman, the land has a prospective oil and gas value, such action will be taken as the facts may warrant.

From the above it will be seen that it is desirable on the part of any applicant for a prospecting permit for land already embraced in a nonmineral entry without a reservation of the mineral, and likewise desirable on the part of any nonmineral entryman who is contending that the land is nonmineral in character, to submit with their respective applications or showings as complete and accurate geological data as may be procurable, preferably the reports and opinions of qualified experts.

(*d*) In case of conflict between a preference-right claim under section 20 of the act and one claimed by virtue of section 18 or 19, the issue will be determined on the basis of priority.

(*e*) Claimants under this section of the act may combine their holdings for the purpose of making joint application for a permit, provided the aggregate area does not exceed 2560 acres and that all the lands for which application is made are within an area of 6 miles square or within the same township.

(*f*) The right of a permittee under a preference-right permit to a lease after discovery is governed by other provisions of the act, as set forth in section 8 of these regulations.

12½. Assignment of Permits.—Permits, after being awarded, may be assigned to qualified persons or corporations upon first obtaining consent of the Secretary of the Interior. Mere rights to receive a permit are not assignable.

II. OIL AND GAS LEASES.

13. Designation and Offer of Lands for Lease.—Pursuant to the provisions of section 17 of the act, the unappropriated deposits of oil or gas situated within known geologic structures of producing oil or gas fields, and the lands containing same, will be divided into leasing blocks or tracts in areas not exceeding 640 acres each, and not exceeding in length two and one-half times their width, and offered for lease at a stated royalty by competitive bidding to the highest responsible bidder having the qualifications prescribed by section 15, paragraph (*a*) hereof.

14. Notice of Lease Offer.—Notice of the offer of lands for lease will be given by publication in a newspaper of general circulation in the county in which the lands or deposits are situated for a period of 30 days; such notice will state the day and hour on which the offering will be made at public auction at the United States land office of the district in which the lands are situated, to the qualified bidder offering the highest bonus for the lease at the stated rental and royalty. Copy of the notice will be posted in said local office during the period of publication. This notice will be published at the expense of the government. All bidders at any such auction are warned against violation of the provisions of section 59 of the United

States Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders.

15. Auction of Lease.—At the time fixed in the notice, the register or receiver will, by public auction, offer the land for lease on the terms and conditions as to payments of royalties and rents fixed in the notice, to the qualified bidder of the highest amount offered as a bonus for the privilege of leasing the land. The successful bidder must deposit with the receiver on the date of the sale, certified check on a solvent bank, or cash, for one-fifth of the amount bid by him, which payment the receiver will credit to "Trust funds—Unearned moneys." At the time of such payment the successful bidder will also file the requisite showing of his qualifications to receive a lease, which shall include the following:

(*a*) Proof of citizenship of applicant; by affidavit of such fact, if native born, or if naturalized, by certified copy of the certificate of naturalization, on the form provided for use in public land matters, unless such copy is already on file; if a corporation, by certified copy of the articles of incorporation and a showing as to the residence and citizenship of its stockholders.

(*b*) The affidavit of the bidder or the affidavit of one of the officers of a corporate bidder that the bidder does not hold another lease in the geologic structure of the same producing oil or gas field, nor more than two leases, or a lease and a permit, in the state, except under sections 18, 18*a*, 19, and 22 of the act; and also that the acceptance of the lease by such successful bidder will not be in violation of the provisions of section 27 of the act relative to excess holdings by individuals or corporations.

The register and receiver will thereupon transmit such showing, together with a report of the proceedings had at the auction, by special letter to the Commissioner of the General Land Office.

16. Award of Lease.—On receipt of the report of the auction from the register and receiver, the Secretary of the Interior will take action thereon, and either award the lease to the successful bidder or reject same, notice of which will be forthwith transmitted to the bidder through the local office. If the lease shall be awarded, the notice will be accompanied by copies of leases for execution by the lessee, who shall, within 30 days from receipt of such notice, execute said lease in triplicate, and pay to the receiver the balance of the bonus bid by him, together with the first year's rental, and also cause to be filed in the land office the bond required by section 2(*a*) of the lease; in lieu of such bond, Liberty bonds will be taken at par in the amount of the bond, as provided in the act of February 24, 1919 (40 Stat. 1148). If the bid be rejected, the receiver will return by his official check the deposit made at the auction. In case of the award of a lease and failure on the part of the bidder to execute same, and otherwise comply with the applicable regulations, the deposit made will be considered forfeited and disposed of as other receipts under this act.

17. Form of Lease.—The lease referred to in the preceding sections will be in form and substance substantially as follows:

LEASE.

U. S. Land Office_____
Serial Number_____

DEPARTMENT OF THE INTERIOR.

Lease of oil and gas lands under the act of February 25, 1920.

Date—Parties.—This indenture of lease entered into, in triplicate, this _____ day of _____ A. D., 19__, by and between the United States of America, acting in this behalf by the Secretary of the Interior, party of the first part, hereinafter called the lessor, and _____ of _____, party of the second part, hereinafter called the lessee, under, pursuant, and subject to the terms and provisions of the act of congress approved February 25, 1920, Public No. 146, entitled "AN act to promote the mining of coal, phosphate, oil, oil shale, gas, and sodium on the public domain," hereinafter referred to as the act, which is made a part hereof, witnesseth:

SECTION 1. *Purposes.*—That the lessor in consideration of rents and royalties to be paid, and the covenants to be observed as herein set forth, does hereby grant and lease to the lessee the exclusive right and privilege to drill for, mine, extract, remove, and dispose of all the oil and gas deposits in or under the following described tracts of land situated in the county of _____, State of _____, and more particularly described as follows: _____ containing _____ acres, more or less, together with the right to construct and maintain thereupon all works, buildings, plants, waterways, roads, telegraph or telephone lines, pipe lines, reservoirs, tanks, pumping stations, or other structures necessary to the full enjoyment hereof, for a period of 20 years, with the preferential right in the lessee to renew this lease for successive periods of 10 years, upon such reasonable terms and conditions as may be prescribed by the lessor, unless otherwise provided by law at the time of the expiration of such periods.

SEC. 2. In consideration of the foregoing, the lessee hereby agrees:

(*a*) *Bond.*—To furnish a bond with approved corporate surety in the penal sum of $5,000, conditioned upon compliance with the terms of the lease.

(*b*) *Commence drilling.*—The lessee agrees, within three months from delivery of executed lease, to proceed with reasonable diligence to install on the leased ground a standard or other efficient drilling outfit and equipment, and to commence drilling at least one well, and to continue such drilling with reasonable diligence to production, or to a point where the well is demonstrated unsuccessful, and thereafter to continue drilling with reasonable diligence at least one well at a time until the lessee shall have drilled wells equal in number to the number of 40-acre tracts embraced in the leased premises, unless the lessor shall, for any reason deemed sufficient, consent in writing to the drilling of a less number of wells; the lessee further agrees to drill all necessary wells fairly to offset the wells of others on adjoining land or deposits not the property of the United States.

(*c*) *Royalty and rents.*—To pay the lessor in advance, beginning with the date of the execution of this lease, a rental of $1 per acre per annum during the continuance hereof, the rental so paid for any one year to be credited on the royalty for that year, and, in addition to such rental, a royalty of _____ per cent of the value of oil or gas produced from the land leased herein (except oil or gas used for production purposes on said lands or unavoidably lost), or, on demand of the lessor, _____ per cent of the oil or gas produced (except oil or gas used for production purposes on said lands, or unavoidably lost), in which case credit for rent shall be on the basis of the current field price of oil, the royalty, when paid in value, to be due and payable monthly on the fifteenth of each month following the month in which produced, to the receiver of public moneys of the proper land district; and when paid in kind, to be delivered in the field where produced at such times, and in such manner as may be required by the lessor; such royalties, whether in value or kind, shall be subject to reduction whenever the average daily production of any oil well shall not exceed 10 barrels per day, if in the judgment of the lessor the wells can not be successfully operated upon the royalties fixed herein.

(*d*) *Sales contract.*—To file with the Secretary of the Interior copies of all sales contracts for the disposition of oil and gas produced hereunder, except for production purposes on the land leased, and, in the event the United States shall elect to take its royalties in money instead of in oil or gas, not to sell or otherwise dispose of the products of the land leased, except in accordance with a sales contract or other method first approved by the Secretary of the Interior.

(*e*) *Monthly statement.*—To furnish monthly statements in detail in such form as may be prescribed by the lessor, showing the amount, quality, and value of all oil and gas produced and saved during the preceding calendar month as the basis for computing the royalty due the lessor. The leased premises, and all wells, improvements, machinery, and fixtures thereon or connected therewith, and all books and accounts of the lessee shall be open at all times for the inspection of any duly authorized officer of the department.

(*f*) *Plats and reports.*—To furnish annually and at such times as the Secretary shall require, in the manner and form prescribed by the Secretary of the Interior, a plat showing all development work and improvements on the leased lands, and other related information, with a report as to all buildings, structures, or other works placed in or upon said leased lands, accompanied by a report in detail as to the stockholders, investment, depreciation, and cost of operation, together with a statement as to the amount and grade of oil and gas produced and sold, and the amount received therefor, by operations hereunder.

(*g*) *Log of wells.*—To keep a log in the form prescribed by the Secretary of all the wells drilled by the lessee, showing the strata and character of the ground passed through by the drill, which log, or copy thereof, shall be furnished to said lessor on demand.

(*h*) *Diligence—Prevention of waste—Health and safety of workmen.*—To exercise reasonable diligence in drilling and operating wells for the oil and gas on the lands covered hereby while such products can be secured in paying quantities, unless consent to suspend operations temporarily is granted by the Secretary of the Interior; to carry on all operations hereunder in a good and workmanlike manner, in accordance with approved methods and practice, having due regard for the prevention of waste of oil or gas developed on the land, or the entrance of water through wells drilled by the lessee to the oil sands or oil-bearing strata, to the destruction or injury of the oil deposits, the preservation and conservation of the property for future productive operations, and to the health and safety of workmen and employees; to plug securely any well before abandoning the same so as to effectually shut off all water from the oil- or gas-bearing strata; not to drill any well within 200 feet of any of the outer boundaries of the lands covered hereby unless the adjoining lands have been patented or the title thereto otherwise vested in private owners; to conduct all mining, drilling, and related productive operations subject to the inspection of the lessor; to carry out at expense of the lessee all reasonable orders and requirements of lessor relative to prevention of waste and preservation of the property and the health and safety of workmen, and on failure so to do the lessor shall have the right to enter on the property to repair damage or prevent waste at lessee's cost; to abide by and conform to regulations in force at the time the lease is granted covering the matters referred to in this paragraph: *Provided*, That lessee shall not be held responsible for delays or casualties occasioned by causes beyond lessee's control.

(*i*) *Taxes and wages—Freedom of purchase.*—To pay when due all taxes lawfully assessed and levied under the laws of the state upon improvements, oil, and gas produced from the lands hereunder, or other rights, property, or assets of the lessee; to accord all workmen and employees complete freedom of purchase, and to pay all wages due workmen and employees at least twice each month in the lawful money of the United States.

(*j*) *Reserved deposits.*—To comply with all statutory requirements and regulations thereunder, if the lands embraced herein have been or shall hereafter be disposed of under laws reserving to the United States the deposits of oil and gas therein, subject to such conditions as are or may hereafter be provided by the laws reserving such oil or gas.

(*k*) *Excess holdings.*—To observe faithfully the provisions of section 27 of the act defining the interest or interests that may be taken, held, or exercised under leases authorized by said act.

(*l*) *Assignment of lease.*—Not to assign this lease or any interest therein, nor sublet any portion of the leased premises, except with the consent in writing of the Secretary of the Interior first had and obtained.

(*m*) *Deliver premises in case of forfeiture.*—To deliver up the premises leased, with all permanent improvements thereon, in good order and condition in case of forfeiture of this lease.

SEC. 3. The lessor expressly reserves:

(*a*) *Rights reserved—Easements and rights of way.*—The right to permit for joint or several use such easements or rights of way, including easements in tunnels

upon, through, or in the lands leased, occupied, or used as may be necessary or appropriate to the working of the same or of other lands containing the deposits described in said act, and the treatment and shipment of products thereof by or under authority of the government, its lessees, or permittees, and for other public purposes.

(*b*) *Disposition of surface.*—The right to lease, sell, or otherwise dispose of the surface of the lands embraced within this lease under existing law or laws hereinafter enacted in so far as said surface is not necessary for the use of the lessee in the extraction and removal of the oil and gas therein.

(*c*) *Pipe lines to convey at reasonable rates.*—The right to require the lessee, his assignee, or beneficiary, if owner, or operator of, or owner of a controlling interest in any pipe line, or any company operating the same which may be operated accessible to the oil derived from lands under such lease, to accept and convey at reasonable rates and without discriminating the oil of the government or of any citizen or company, not the owner of any pipe line, operating a lease or purchasing oil or gas under the provisions of this act.

(*d*) *Monopoly and fair prices.*—Full power and authority to carry out and enforce all the provisions of section 30 of the act, to insure the sale of the production of such leased lands to the United States and to the public at reasonable prices to prevent monopoly and to safeguard the public welfare.

(*e*) *Helium.*—Pursuant to section 1 of the act, the lessor reserves the right to take all helium from any gas produced under this lease, but the lessee shall not be required to extract and save the helium for the lessor; in case the lessor elects to take the helium, the lessee shall deliver all gas containing same, or portion thereof desired, to the lessor in the manner required by the lessor, for the extraction of the helium in such plant or reduction works for that purpose as the lessor may provide, whereupon the residue shall be returned to the lessee with no substantial delay in the delivery of gas produced from the well to the purchaser thereof; provided, that the lessee shall not, as a result of the operation in this section provided for, suffer a diminution in value of the gas from which the helium has been extracted, or loss otherwise, for which the lessee is not reasonably compensated, save for the value of the helium extracted; the lessor further reserves the right to erect, maintain, and operate any and all reduction works and other equipment necessary for the extraction of helium on the premises leased.

SEC. 4. *Surrender and termination of lease.*—The lessee may, on consent of the Secretary of the Interior first had and obtained in writing, surrender and terminate this lease upon the payment of all rents, royalties, and other obligations due and payable to the lessor, and upon payment of all wages and moneys due and payable to the workmen employed by the lessee, and upon a satisfactory showing to the Secretary that the public interest will not be impaired; but in no case shall such termination be effective until the lessee shall have made full provision for conservation and protection of the property; upon like consent had and obtained the lessee may surrender any legal subdivisions of the area included herein.

SEC. 5. *Purchase of materials, etc., on termination of lease.*—Upon the expiration of this lease, or the earlier termination thereof pursuant to the last preceding section, the lessor or another lessee may, if the lessor shall so elect within six months from the termination of the lease, purchase all materials, tools, machinery, appliances, structures, and equipment placed in or upon the land by the lessee, and in use thereon as a necessary or useful part of an operating or producing plant, on the payment to the lessee of such sum as may be fixed as a reasonable price therefor by a board of three appraisers, one of whom shall be chosen by the lessor, one by the lessee, and the other by the two so chosen; pending such election all equipment shall remain in normal position. If the lessor, or another lessee, shall not, within six months, elect to purchase all or any part of such materials, tools, machinery, appliances, structures, and equipment, the lessee shall have the right at any time, within 90 days, to remove from the premises all the materials, tools, machinery, appliances, structures, and equipment which the lessor shall not have elected to purchase, save and except casing in wells and other equipment or apparatus necessary for the preservation of the well or wells.

SEC. 6. *Judicial proceedings in case of default.*—If the lessee shall fail to comply with the provisions of the act or make default in the performance or observance of any of the terms, covenants, and stipulations hereof, or of the general regulations

promulgated and in force at the date hereof, and such default shall continue after service of written notice thereof by the lessor, then the lessor may institute appropriate judicial proceedings for the forfeiture and cancellation of this lease in accordance with the provisions of section 31 of said act; but this provision shall not be construed to prevent the exercise by the lessor of any legal or equitable remedy which the lessor might otherwise have. A waiver of any particular cause of forfeiture shall not prevent the cancellation and forfeiture of this lease for any other cause of forfeiture, or for the same cause occurring at any other time.

SEC. 7. *Heirs and successors in interest.*—It is further covenanted and agreed that each obligation hereunder shall extend to and be binding upon and every benefit hereof shall inure to the heirs, executors, administrators, successors, or assigns of the respective parties hereto.

SEC. 8. *Unlawful interest.*—It is also further agreed that no member of or delegate to congress or resident commissioner, after his election or appointment, or either before or after he has qualified, and during his continuance in office, and that no officer, agent, or employee of the Department of the Interior shall be admitted to any share or part in this lease or derive any benefit that may arise therefrom, and the provisions of section 3741 of the Revised Statutes of the United States, and sections 114, 115, and 116 of the Codification of the Penal Laws of the United States approved March 4, 1909 (35 Stat. 1109), relating to contracts enter into and form a part of this lease so far as the same may be applicable.

In witness whereof

THE UNITED STATES OF AMERICA,

By _____ _____ [L. S.]

_____ _____

Witness:

_____ _____ _____ _____ [L. S.]

_____ _____ _____ _____ [L. S.]

_____ _____ _____ _____ [L. S.]

Bond required under paragraph 2*a* of the lease should be in substantially the following form:

BOND.

DEPARTMENT OF THE INTERIOR.

GENERAL LAND OFFICE.

U. S. Land Office_____
Serial Number_____

Bond of oil and gas lessee.

[Act of February 25, 1920 (Public No. 146).]

Know all men by these presents, That we, _____ _____, of the county of _____, in the State of _____, as principal, and _____ of the county of _____, in the State of _____, as surety, are held and firmly bound unto the United States of America in the sum of _____ dollars, lawful money of the United States, for the use and benefit of the United States and of any entryman or patentee of any portion of the land covered by the hereinafter described lease heretofore entered or patented with a reservation of the oil and gas deposits to the United States, to be paid to the United States, for which payment, well and truly to be made, we bind ourselves, and each of us, and each of our heirs, executors, administrators, successors, and assigns, jointly and severally by these presents.

Signed with our hands and sealed with our seals this _____ day of _____, in the year of our Lord one thousand nine hundred and _____.

The condition of the foregoing obligation is such that

Whereas the said principal, by instrument dated _____, has been granted the exclusive right to drill for, mine, extract, remove, and dispose of all the oil and gas deposits in or under the following described lands _____, under and pursuant to the provisions of the act approved February 25, 1920 (Public No. 146); and

Whereas the said principal has by such instrument entered into certain covenants and agreements set forth therein, under which operations are to be conducted:

Now, therefore, if said principal shall faithfully comply with all the provisions of the above described lease, then the above obligation is to be void and of no effect, otherwise to remain in full force and virtue.

Signed, sealed, and delivered in presence of

Name and address of witness:

------ ------ ------ ------ [L. S.]
Principal.

------ ------ ------ ------ [L. S.]
Surety.

Where government bonds are deposited as security in lieu of a surety bond, in compliance with paragraph 2*a* of the lease form, same should be accompanied with a combined bond and power of attorney to sell, duly executed by the lessee, along the same general lines as the form set out in paragraph 4*h* of these regulations with suitable changes made in the condition of the bond to correspond with the condition in the lease bond, form for which is above set out.

III. RELIEF MEASURES.

Sections 18, 19, and 22 of the act provide for the "relief," so called, of certain defined claimants of oil and gas lands, who at date of the act had not perfected their claims under the preexisting mining laws, and are prevented from doing so by withdrawal of the land or by this act.

18. Conditions for Relief Under Section 18:

(*a*) That the land claimed must have been included in the executive order of withdrawal of September 27, 1909, and must have remained so withdrawn.

(*b*) That the claim must have been initiated under the placer mining laws prior to July 3, 1910, and claimed and possessed continuously from that time.

(*c*) That no claimant who has acquired any interest in the land since September 1, 1919, from another claimant who, on that date or since that time, was, or is claiming or holding, more than the maximum allowed a claimant under section 18 of the act, may secure a lease under section 18, or any interest therein. This limitation does not, however, apply to an exchange of an interest in such lands made prior to January 1, 1920, which did not increase or reduce the area or acreage held or claimed, in excess of the maximum by either party to the exchange.

(*d*) That claimant or predecessors must have drilled an oil or gas well on the land to discovery.

(*e*) That all conflicting claims asserted prior to July 1, 1919, must have been disposed of, as provided in section 28 hereof or otherwise.

(*f*) That no claimant who has been guilty of any fraud or who had knowledge or reasonable grounds to know of any fraud, or who has not acted honestly and in good faith, shall be entitled to any of the benefits of this section.

(*g*) That claimant must, on or before August 25, 1920, file a relinquishment to the United States of all right, title, and interest in and to the land, together with an application for a lease. This relinquishment may be in the form of an unconditional quitclaim

deed, duly executed and acknowledged, but not recorded, and when filed will be held for such action as the facts and the law in the case warrant and require.

(*h*) That claimant must pay for one-eighth of the value at the time of production of all oil and gas produced prior to date of filing relinquishment and application for relief, exclusive of oil and gas used on the land for production purposes, or unavoidably lost.

19. Relief That May Be Granted Under Section 18:

(*a*) *Lands not in naval petroleum reserves.*—A qualified claimant, upon complying with the provisions of the act and these regulations, will be entitled to a 20-year lease from the United States, commencing and effective as of the date of filing relinquishment and application for relief, substantially in the form prescribed in section 17 hereof, at a royalty to be fixed by the Secretary of the Interior, but not less than 12½ per cent of all oil and gas produced exclusive of that used for production purposes on the claim, or unavoidably lost. There is, however, a limitation placed by the act upon the acreage that may be included in such lease. If the geologic oil or gas structure of the producing field in which the claim is situated does not exceed 640 acres in area the lease may include the entire area if covered by the claim; but if the area of such structure exceeds 640 acres the act provides that not more than one-half of the area, same to be selected by the claimant but in no case to exceed 3200 acres, may be leased to any one claimant.

(*b*) *Lands in naval petroleum reserves.*—If the land claimed is within a naval petroleum reserve the claimant will be entitled to lease only the producing wells on the claim, together with an area of land sufficient for the operation of such wells, upon a royalty to be fixed by the Secretary of the Interior, but not less than 12½ per cent of the production, except that used for production purposes on the claim or unavoidably lost. The act forbids the drilling of any wells in lands subject to this provision within 660 feet of the leased wells without the consent of the lessee. It further provides that the President may, in his discretion, lease the remainder or any part of the claim on which such wells have been drilled, and in the event of such leasing the claimant shall have a preference to such lease. The President may also permit the lessee of any well to drill additional wells within the limited area of 660 feet upon such terms and conditions as he may prescribe. These terms and conditions can not be prescribed here, but will be determined on the merits in each separate case.

(*c*) *Royalties.*—The royalties payable under leases granted pursuant to section 18 of the act are cumulative, and are hereby determined and prescribed as follows:

For all oil produced of 30° Baume or over upon each claim on which the wells average not exceeding 20 barrels per day per well for the calendar month, 12½ per cent; upon each claim on which the wells average more than 20 barrels and not more than 50 barrels per day per well for the calendar month, 16⅔ per cent; upon each claim on which the wells average more than 50 barrels and not more than 100 barrels per day per well for the calendar month, 20 per cent;

upon each claim on which the wells average more than 100 barrels per day per well for the calendar month, 25 per cent.

For all oil produced of less than 30° Baume upon each claim on which the wells average not exceeding 20 barrels per day per well for the calendar month, $12\frac{1}{2}$ per cent; upon each claim on which the wells average more than 20 barrels and not more than 50 barrels per day per well for the calendar month, $14\frac{2}{7}$ per cent; upon each claim on which the wells average more than 50 barrels and not more than 100 barrels per day per well for the calendar month, $16\frac{2}{3}$ per cent; upon each claim on which the wells average more than 100 barrels per day per well for the calendar month, 20 per cent.

Only wells which have a commercial production during at least a part of the month shall be considered in ascertaining the average production herein, and the Secretary of the Interior shall determine what are commercially productive wells under this provision.

The royalties on gas produced, if any, will be fixed and determined in each lease.

20. Conditions for Relief Under Section 19:

A. *For permit.*—(*a*) That the land must not be in a naval petroleum reserve.

(*b*) The applicant or his predecessor in interest must have been an occupant or claimant of the land on or before October 1, 1919, under a claim initiated under the placer mining laws, when the land was not withdrawn, provided that a transferee of such a claim subsequent to October 1, 1919, will not be permitted to hold permits under section 19 of the act to exceed 2560 acres in the same geologic structure, nor for more than three times that area in the same state.

(*c*) That claimant, by himself or predecessor in interest, must have performed all acts under the preexisting laws necessary to valid locations, except to make discovery.

(*d*) That prior to February 25, 1920, claimant must have performed work or expended on or for the benefit of such locations an amount equal in the aggregate to $250 for each location.

(*e*) That no claimant who has been guilty of any fraud or who had knowledge, or reasonable grounds to know of any fraud, or who has not acted honestly and in good faith, shall be entitled to any of the benefits of this section.

(*f*) That claimant must, on or before August 25, 1920, file a relinquishment to the United States of all right, title, and interest in and to the land, together with an application for a permit. This relinquishment may be in the form of an unconditional quit-claim deed, duly executed and acknowledged, but not recorded, and when filed will be held for such action as the facts and the law in the case warrant and require.

B. *For lease.*—The conditions necessary to obtaining a lease under section 19 of the act are identical with those outlined in paragraphs (*a*), (*b*), (*e*), and (*f*), for permits, together with the following additional conditions:

(*a*) That claimant must have made a discovery of oil or gas on or before February 25, 1920.

(*b*) That claimant must not be entitled to relief on the land in question under section 18 of the act.

(*c*) That claimant must pay for one-eighth of the past production up to date of filing application for relief, exclusive of that used on the land for production purposes or unavoidably lost.

21. Relief That May Be Granted Under Section 19:

(*a*) A claimant qualified under the above conditions relating to permits, upon complying with the provisions of the act and these regulations, will be entitled to a prospecting permit upon the same terms, conditions, and limitations as to acreage, as other permits provided for in the act, substantially in form prescribed in section 6 hereof.

(*b*) A claimant qualified under the above conditions relating to leases is entitled to a 20-year lease from the United States, effective from date of filing application for relief, substantially in the form prescribed in section 17 hereof, the royalty to be fixed by the Secretary of the Interior, but such royalty may not be less than 12½ per cent of all oil and gas produced exclusive of that used for production purposes on the land or unavoidably lost. In the event the land is in the geologic structure of proven territory at the time of granting the permit under this section, the royalty required under the lease based thereon shall not be less than 12½ per cent, but if at the time the permit is granted the land is not in proven territory the amount of royalty will be governed by the general terms of the act as set out in section 14 thereof.

22. Alaska Claims—Conditions for Relief Under Section 22:

A. *For permit.*—(*a*) That claimant must have been an occupant or claimant of the land on February 25, 1920, under a claim initiated under the placer mining laws by claimant or predecessors prior to November 3, 1910, the date of the executive order withdrawing all public lands in Alaska containing petroleum deposits, including those in national forests.

(*b*) That claimant must have performed all acts prior to November 3, 1910, under the then existing laws necessary to valid locations except to make discovery.

(*c*) That claimant, (1) prior to November 3, 1910, must have made substantial improvements for the discovery of oil or gas on or for each location, or (2) prior to February 25, 1920, expended not less than $250 in improvements on or for the benefit of each location.

(*d*) That claimant must on or before February 25, 1921, or within six months after final denial or withdrawal of application for patent, file a relinquishment to the United States of all right, title, and interest in and to the land. This relinquishment must be in the form of an unconditional quit-claim deed, duly executed and acknowledged, but not recorded, and when filed will be held for such action as the facts and the law in the case warrant and require.

In addition to the above, the conditions outlined in paragraph (*e*) of section 20 hereof are applicable to relief in Alaska.

B. *For lease.*—The conditions necessary to obtaining a lease under section 22 of the act are identical with those outlined in the para-

graphs relating to permits in Alaska together with the following additional conditions:

(*a*) That claimant or predecessors must have drilled an oil or gas well on the land to discovery.

(*b*) That claimant must pay for one-eighth of the past production exclusive of that used on the land for production purposes or unavoidably lost.

23. ALASKA CLAIMS—RELIEF THAT MAY BE GRANTED UNDER SECTION 22:

(*a*) A claimant qualified under the above conditions relating to permits, upon complying with the conditions of the act and these regulations will be entitled to prospecting permits under the same terms and conditions as other permits in Alaska provided for in section 13 of the act, substantially in the form prescribed in section 6 hereof.

(*b*) A claimant qualified under the above conditions relating to leases is entitled to a lease substantially in the form prescribed in section 17 hereof, the rental and royalty to be fixed by the Secretary of the Interior and specified in the lease, subject to readjustment at the end of each 20-year period of the lease.

(*c*) Only five permits or leases in the aggregate may be held at any one time by any claimant, and not more than 1280 acres may be included in one permit under section 22 of the act.

23½. ROYALTIES AND RENTALS ON OIL AND GAS LEASES IN ALASKA.—The royalties and rentals payable under oil and gas leases granted in Alaska pursuant to sections 14 and 22 of the act of February 25, 1920 (Public No. 146), are hereby determined and prescribed as follows:

(*a*) For leases granted under section 22 of the act, the royalty shall be: (1) For the first five years from and after the date of the lease, no royalty, except in the case of leases whereon the producing wells yield an average of 100 barrels or more per well per day for the calendar month, in which event the royalty shall be 5 per cent of all oil produced; (2) for the second period of five years from and after the date of each lease under section 22 of the act the royalty upon all leases shall be 5 per cent; (3) for the succeeding 10 years the royalty upon all leases under section 22 of the act shall be 10 per cent of all oil produced.

(*b*) Upon leases granted in Alaska under section 14 of the act, the permittee who discovers oil will be entitled to a lease for one-fourth of the area of the permit without payment of royalty for the first five years succeeding the date of the lease and thereafter shall pay a royalty of 5 per cent upon all oil produced. On the remaining lands included within the area of the permit, the permittee will be given a preference right to a lease without payment of royalty for the first five years succeeding the date of the lease, except in the case of leases whereon the producing wells yield an average of 100 barrels or more per well per day for the calendar month, in which event the royalty shall be 5 per cent; for the second five years, the lessee will be required to pay a royalty of 5 per cent upon all oil

produced, and for the succeeding 10 years, a royalty of 10 per cent upon all oil produced.

(*c*) No royalty will be charged in any case upon leases wherein the wells upon the lands average less than 10 barrels per well per day for the calendar month.

(*d*) No rental upon any oil or gas lease in Alaska will be charged during the first five years succeeding the date of the lease. After the expiration of the first five years succeeding the date of the lease, a rental of 10 cents per acre per annum will be charged on all leases, payable in advance; *provided*, that the rentals so paid for any one year shall be credited upon the royalties accruing for that year.

(*e*) The royalties on gas produced, if any, will be fixed and determined in each lease.

24. Beneficiaries Under Leases or Permits.—All leases or permits under sections 18, 19, and 22 shall inure to the benefit of the claimant and all persons claiming through or under him by lease, contract, or otherwise, as their interests may appear, subject to the same limitations as to area and acreage as is provided for claimant, but such persons will not necessarily be made parties to gevernment leases, and may assert their rights in the courts. Disputes of this character are not to be confused with adverse claims based upon independent title, hereinafter referred to. (See Sec. 28 hereof.)

24½. Who May Apply.—All proper parties to a claim for relief under section 18, 19, or 22 of the act should join in the application, but, if for any sufficient reason that is impracticable, any person claiming a fractional or undivided interest in such claim may make application for a lease or permit, stating the nature and extent of his interest, and the reasons for nonjoinder of his coowner or coowners. In cases where two or more applications are made for the same claim or part of a claim, leases or permits will be granted to one or more of the claimants, as the law and facts shall warrant and as shall be deemed just.

25. Form and Contents of Application.—No set forms of application for a lease under section 18, 19, or 22, or a permit under section 19 or 22 of the act can be prescribed because the facts and circumstances pertaining to claims for relief are so varied. Applications for such leases or permits must be made under oath and the supporting documents and papers certified or under oath so far as practicable. The application, with all the accompanying papers, should be filed in the United States land office of the district in which the land is situated. Applications and supporting papers need not be executed in duplicate, but one complete copy of each application and supporting papers (except abstract of title) should be filed with the application, which copy will be transmitted by the register and receiver to the Chief of Field Division and notation to that effect made on the original. The application should contain full information as to the facts upon which the applicant relies for relief, covering the following points and such additional matters as may, from the peculiar facts in the case, be material in the establishment of his claim under the law:

(*a*) Date of application for lease or permit.

(*b*) Applicant's name, post-office address and citizenship.

(*c*) *Description of land.*—The land for which the application is made must be described by legal subdivisions of section, township, and range, if surveyed; if not surveyed, then by metes and bounds and courses and distances from some permanent monument. If the application is for a lease of unsurveyed land, the applicant, after he has been awarded the right to a lease, but before issuance thereof, will be required to deposit with the United States surveyor general of the state in which the land is situated the estimated cost of making a survey of the land, the balance, if any, after the survey is completed to be returned.

(*d*) *Origin and basis of applicant's claim for relief.*—The applicant must bring his claim clearly within all the requirements of the act as specifically pointed out in sections 18, 20, and 22 of these regulations. Every application must be supported by a duly certified abstract of title to the land brought up to the date of filing the application. In the event an abstract of title is already on file in the land department, a supplemental abstract extending over the period or periods not covered by the former may be furnished, and if furnished will be considered in connection with the abstract already on file. If any fraud has been committed in connection therewith, then a full affirmative showing must be made by the applicant to the effect that he has not been a party to such fraud, and that he has not been guilty of any fraud or had knowledge of fraud or reasonable grounds to know of any fraud in connection with his claim. If an application for patent has been filed, a brief résumé of the actions taken thereon should be stated. If the land is or has been involved in litigation in the courts to which the United States is a party, the status or result of such litigation should be furnished.

(*e*) *Particulars as to conflicting claims or interests.*—All conflicting or disputed claims, if any, to the land or production therefrom, specifying the character and extent of such interests, must be shown.

(*f*) *Discovery.*—Before a lease may be awarded under the relief sections of the act it must be satisfactorily shown that the applicant or his predecessors have drilled a well to a substantial and certain discovery of oil or gas in a producing stratum on the land covered by the location under which the applicant is asserting his claim.

(*g*) *Wells, improvements, and production.*—With each application for a lease under section 18, 19, or 22 of the act there must be filed a complete and detailed statement showing the number, depth, condition, and present daily production of all wells drilled on the land by the applicant and his predecessors in interest, and the nature and extent of all other improvements placed thereon by them.

With each application for a permit under section 19 or 22 of the act, a description of the work performed and improvements made upon or for the benefit of the location by the applicant and his predecessors must be filed, together with an itemized statement of the cost thereof. If the application is made under section 22, the date the work was performed or the improvements made must also be shown.

In either case applicant must show the position of all wells and improvements by courses and distances from the nearest corner of the public land survey, if the land is surveyed; if not surveyed, then from a corner of the claim. This may be shown by means of a diagram.

(*h*) *Amount and value of past production.*—Claimant must furnish a complete detailed statement, by months, of all past production from the land, up to the date of filing the application and relinquishment, showing (1) the grade and total quantity of oil and gas produced; (2) the amount sold or otherwise disposed of, to whom sold, and the selling price or other consideration received therefor; (3) a statement of the grade and amount of any and all such production held in storage, when produced, and the value at time of production; and (4) the amount consumed for production purposes on the land, or unavoidably lost.

Copies of any and all contracts under which oil or gas produced from the land has been or is being sold or otherwise disposed of must be furnished.

(*i*) *Inspection of records.*—The agreement on the part of the applicant to permit the inspection of any and all books, records, and accounts having any bearing on the data or information required by the application and to furnish copies or abstracts of such books, records, or accounts, on demand.

(*j*) *Interest in other leases and permits.*—The applicant will also furnish a complete statement of all lands for which he has filed application for lease or permit under sections 18, 19, and 22 of the act, and of such lands as are included in other applications in which he has any direct or indirect interest, together with a full disclosure of such interest by stock ownership or otherwise. If the applicant is a corporation, a certified copy of its articles of incorporation must be furnished, and a full disclosure made of the ownership of its stock, whether such stock is owned, held, or controlled directly or indirectly by any other person or corporation, who or which is an applicant for or a holder of a lease under said sections, and, in the event of such ownership, a description of the legal subdivisions of all the lands affected thereby is required. Lists of stockholders need not necessarily be filed in the local land offices, but may be filed directly with the Commissioner of the General Land Office, where they will be kept confidential except for government purposes. In the event the lands so affected are not surveyed they may be described by the usual method of courses and distances and acreage.

(*k*) *Limitation of area.*—Applications for lease under section 18 of the act should disclose all other applications in which the applicant is directly or indirectly interested, for lease under said section for lands (describing same) in the same geologic structure; and applications under section 22 of the act should show all other applications for leases or permits under said section. The boundaries of the geologic structures of the various producing fields will be determined and announced by the United States Geological Survey under supervision of the Secretary of the Interior, and such information will be placed on file in all United States land offices.

(*l*) *Interests of beneficiaries.*—In applications for lease the nature and extent of the interests of all beneficiaries thereof by virtue of operating contracts or otherwise, not covered by paragraph 25 (*j*), must be disclosed, together with a full showing of all their interests in other leases or applications for leases under this act. If the beneficiary is a corporation or joint-stock company, a full disclosure must be made of the ownership of its stock and the residence and citizenship of its stockholders.

26. Payment of Royalty on Past Production.—The application must be accompanied by a certified check in the amount of one-eighth of the gross value of all oil and gas produced and sold or held in storage, as per the statement required in paragraph 25 (*h*). All such sums will be held by the receiver in his account of "Trust funds—Unearned moneys" to await instructions as to their disposition. In lieu of the certified check herein required, the applicant may be permitted to deposit a bond by approved surety company in an amount not less than one-eighth of the estimated gross value of all oil and gas produced and sold or held in storage, securing the payment to the United States within 30 days from the award of the lease of the cash value of the past production due the United States under this act. In cases where the proceeds, or part thereof, of such past production have been deposited in escrow, pursuant to operating agreements under the act of August 25, 1914 (38 Stat. 708), or where in suits brought by the government affecting such lands the proceeds of production, or part thereof, have been impounded in the custody of receivers, a formal tender may be made of the funds so held in escrow or impounded to the extent available or in the amount necessary, as the case may be, in lieu of such cash payment. In such cases the interest accumulating on such escrowed or impounded moneys after the tender is made will go to the government.

Liberty bonds will be accepted at original cost in payment of royalty on past production in such proportion as the escrowed or impounded moneys have been invested therein.

Operating contracts made under the provisions of the act of August 25, 1914, supra, and in operation at the time of such tender, will not be terminated until the entire transaction of granting a lease and payment of royalty on past production shall have been consummated; nor will the Department of Justice be requested to dismiss any suits involving the land affected until the application for a lease has been adjudicated and approved; whereupon, after the suit has been dismissed and the impounded money tendered paid over to the government, the lease will be executed and delivered.

27. Publication of Notice.—Immediately upon the filing of an application for a lease or permit under section 18, 19, or 22 of the act, the register and receiver will cause to be published, at the expense of the applicant, in a newspaper designated by the register, published in the vicinity of the land and most likely to give notice to the general public, a notice of the said application in substantially the following form:

PUBLISHED NOTICE.

DEPARTMENT OF THE INTERIOR.

UNITED STATES LAND OFFICE.

_____ _____,
_____ _____, 19__.

Notice is hereby given that _____ _____, of _____, has applied for an oil and gas _____ under section _____ of the act of February 25, 1920 (Public No. 146), for _____ section _____, township _____ of range _____, _____ meridian, _____ county, State of _____. Any and all persons having adverse or conflicting claims to said land are hereby notified that a full statement, under oath, of such claim should be filed in this office showing a superior right to a permit or lease under said act or a valid existing adverse or conflicting claim to the land or the minerals therein under the public land laws, on or before _____; otherwise such claim may be disregarded in granting the permit or lease applied for.

_____ _____,
Register.

The register and receiver will fix a date in the notice on or before which adverse or conflicting claims may be asserted, which date should be not less than 30 nor more than 40 days after the date of first publication of the notice.

Such notice will be published in the regular issue and not in any supplement of the newspaper, once each week for a period of five consecutive weeks if in a weekly paper, or if in a daily paper for a period of 30 days. The register and receiver will post a copy of said notice in a conspicuous place in their office during the period of publication.

Upon the applicant's furnishing satisfactory proof of such publication, but not earlier than the day following that set in the published notice on or before which adverse or conflicting claims were to be filed, the register and receiver will transmit by special letter all papers in the case, including any adverse or conflicting claims that may have been filed, together with proof of posting said notice in their office, to the Commissioner of the General Land Office.

28. ADVERSE OR CONFLICTING CLAIMS—PROCEDURE.—In case of adverse or conflicting claims for leases under section 18, 19, or 22, or permits under section 19 or 22, the Secretary of the Interior is clothed with authority to grant leases or permits, as the case may be, to one or more of them, as shall be deemed just.

(*a*) To have their claims considered in connection with the awarding of leases or permits it will be necessary for adverse claimants to make full showing (1) of a superior right to a lease or permit under this act, or (2) a superior right under some other public land law. If the former, the conflicting claimant must make out a complete case in his own behalf as required by these regulations on or before August 25, 1920.

(*b*) Upon receipt of the application and showing of an adverse claimant the Commissioner of the General Land Office will consider same. If, in his judgment, the adverse claimant has failed to make a prima facie case showing that he is entitled to a lease or permit, as the case may be, for at least part of the land, his application will

be rejected, subject to appeal to the Secretary of the Interior. But if the adverse claimant makes out a prima facie case the commissioner will take such course as may be advisable under the circumstances of each particular case to settle and adjust the rights of the respective parties, and may, if deemed necessary, order a formal hearing to settle disputed questions of fact. In the absence of appeal to the Secretary of the Interior from the final order or decision of the commissioner same shall be conclusive.

29. COMPROMISES UNDER SECTION 18*a*.—No special procedure will be outlined under this section. Any request for a compromise or settlement under this section which may be filed in the Land Department will be transmitted to the President with such report as may be deemed advisable under the circumstances of the particular case. In case the land is in a naval petroleum reserve the Navy Department will be consulted before making such report.

IV. RIGHTS OF WAY FOR PIPE LINES.

30. Section 28 of the act grants to any applicant having the qualifications outlined in section 1 of these regulations rights of way through public lands of the United States, including national forests, for pipe-line purposes for the transportation of oil or natural gas, on condition that the pipe lines for which rights of way are granted shall be operated and maintained as common carriers. The grant carries with it the right to the use of the ground actually occupied by the pipe line, and 25 feet on each side thereof for the purpose of construction, maintenance, and operation of the pipe line. Applicants for rights of way under this act will be governed by the regulations set forth in circular of June 6, 1908 (36 L. D. 567), in so far as applicable, appropriate changes being made in the forms therein prescribed to make them applicable to right of way cases arising under the act of February 25, 1920 (public No. 146), for pipe lines to be constructed, maintained, and operated as common carriers. Failure on the part of grantee to fulfill the conditions imposed by the act shall be ground for forfeiture of the grant by the United States district court for the district in which the property, or some part thereof, is situated.

V. FEES AND COMMISSIONS.

31. Under the authority of section 38 of the act, the following fees and commissions are prescribed for transactions under the act:

(*a*) For receiving and acting on each application for a permit, lease, or other right filed in the district land office in accordance with these regulations, there shall be paid a fee of $2 for each 160 acres, or fraction thereof, in such application, but such fee in no case to be less than $10, the same to be paid by the applicant and considered as earned when paid, and to be credited in equal parts on the compensation of the register and receiver within the limitations provided by law.

(*b*) A commission of 1 per cent on all moneys received in each receiver's office, to be equally divided between the register and receiver; such commission will not be collected from the applicant,

lessee, or permittee in addition to the moneys otherwise provided to be paid.

It should be understood that the commission here provided for will not affect the disposition of the proceeds arising from operations under the act as provided in section 35 thereof; also that such commission will be credited on compensation of registers and receivers only to the extent of the limitation provided by law for maximum compensation of such officers.

(See Hotkin, 49 L. D. 344.)

VI. REPEALING AND SAVING CLAUSES.

32. Section 37 of the act provides that hereafter the deposits of coal, phosphate, sodium, oil, oil shale and gas, referred to and described therein, may be disposed of only in the manner provided in the act "except as to valid claims existent at date of passage of this act, and thereafter maintained in compliance with the laws under which initiated, which claims may be perfected under such laws, including discovery.

Stated negatively under this section of the act the following classes of oil or gas placer locations, so called, notwithstanding absence of fraud and full compliance with law in other respects, may not proceed to patent, viz:

(*a*) Any location made after withdrawal of the land.

(*b*) Any location made before withdrawal of the land, but not perfected by discovery at date of withdrawal, which does not come within the protective proviso of section 2 of the act of June 25, 1910 (36 Stat. 847); that is to say, any claimant who, at date of withdrawal, was not a *bona fide* occupant or claimant in diligent prosecution of work leading to discovery of oil or gas, and who has not continued in such diligent prosecution to discovery.

(*c*) Any location on lands not withdrawn, on which, at the date of the act, the claimant had not made discovery or was not in diligent prosecution of work leading to discovery, and does not continue such work with diligence to discovery.

Very respectfully,

CLAY TALLMAN,
Commissioner.

Approved:

JOHN BARTON PAYNE,
Secretary.

APPENDIX.

(To 'Oil and Gas Regulations.')

DIGEST OF DECISIONS AND OPINIONS IN CONNECTION WITH THE ADMINISTRATION OF THE ACT OF FEBRUARY 25, 1920, AS APPLIED TO OIL AND GAS.

Permits for Lands in Government Reclamation Projects.

In the case of permits issued for lands within reclamation withdrawals the following additional conditions will be included in the permit:

7. (*b*) To reimburse damage sustained by any reclamation homestead entryman pursuant to the requirements of paragraph 8 hereof: (*c*) To pay any damage caused to any reclamation project or the water supply thereof by failure to comply fully with the requirements of paragraph 9 hereof.

8. That as to any lands covered by this permit which are also embraced in any reclamation homestead entry with a reservation of the oil and gas to the United States, permittee shall reimburse the entryman for all damage to crops or improvements caused by such drilling or other operations, such damage to include reimbursement of the entryman by the permittee of all reclamation charges for construction, operation, and maintenance for the portion of the land used and occupied by the permittee during the period of such use and occupation.

9. That as to any lands covered by this permit within the area of any government reclamation project or in proximity thereto the permittee shall erect such dikes and embankments or take such other precautions as may be necessary, as required by the project manager, effectively to impound any flow of refuse oil, salt water, or oil from wells drilled, to prevent any injury to lands susceptible of irrigation under such project or injury to the water supply thereof.

In such case the following form of bond will be required:

BOND.

DEPARTMENT OF THE INTERIOR.

GENERAL LAND OFFICE.

U. S. Land Office_____
Serial Number_____

Bond of oil and gas permittee.

[Act of February 25, 1920 (Public No. 146).]

Know all men by these presents, That _____ _____ of _____ State of _____ as principal, and _____ _____ of _____ State of _____, as surety, are held and firmly bound unto the United States of America, for the use and benefit of the United States and of any reclamation homestead entryman on any of the hereinafter described lands embraced in that certain prospecting permit hereinafter referred to, in the sum of $5,000, lawful money of the United States, for which payment, well and truly to be made, we bind ourselves, and each of us, and each of our heirs, executors, administrators, successors, and assigns jointly and severally by these presents.

Signed with our hands and sealed with our seals this _____ day of _____, 19__.

The condition of the foregoing obligation is such that, whereas the said principal has been granted under the act of February 25, 1920, Public No. 146, a permit (Serial No. _____) to prospect for oil and gas for two years, upon the following described lands: _____ on condition that the permittee shall (*a*) repair promptly, so far as possible, any damage to the oil strata or deposits resulting from improper methods of operation; (*b*) reimburse any homestead entryman of land covered by said permit for all damage to crops and improvements caused by drilling or other operation by the permittee, such damage to include reimbursement of the entryman by the permittee of all reclamation charges for construction, operation and maintenance for the portion of the land used and occupied by the permittee during

the period of such use and occupation by the permittee; and (*c*) erect such dikes and embankments or take such other precautions as may be necessary, as required by the project manager, effectively to impound any flow of refuse oil, salt water, or oil from wells drilled, to prevent any injury to lands susceptible of irrigation under any government irrigation project or injury to the water supply thereof.

Now, therefore, if said principal shall promptly and in all respects comply with said conditions, then the above obligation shall be void and of no effect; otherwise and in default of full and complete compliance therewith the said obligations shall remain in full force and effect.

Signed, sealed and delivered in the presence of:

Name and address of witness:

_____ _____ _____ _____ [L. S]
Principal.

_____ _____ _____ _____ [L. S]
Surety.

Permits for Deposits Reserved Under Act of July 17, 1914 (38 Stat. 509).

In the case of permits issued for deposits of oil or gas reserved to the United States under the provisions of the act of July 17, 1914 (38 Stat. 509), the following additional condition will be included in paragraph 7 thereof:

(*b*) To reimburse any entryman or owner of any portion of said lands heretofore entered with a reservation of the oil and gas deposits to the United States made pursuant to the act of July 17, 1914 (38 Stat. 509), for any damage to the crops and improvements of such entryman or owner resulting from drilling or other prospecting operations.

In such case the following form of bond will be required:

BOND

DEPARTMENT OF THE INTERIOR.

GENERAL LAND OFFICE.

U. S. Land Office_____
Serial Number_____

Bond of oil and gas permittee.

[Act of February 25, 1920 (Public No. 146).]

Know all men by these presents, That _____ _____, of _____, State of _____ as principal, and _____ _____, of _____, State of _____, as surety, are held and firmly bound unto the United States of America, for the use and benefit of the United States, and of any entryman or owner of any of the hereinafter described lands embraced in that certain prospecting permit hereinafter referred to, in the sum of $1,000 lawful money of the United States, for which payment, well and truly to be made, we bind ourselves, and each of us, and each of our heirs, executors, administrators, successors, and assigns, jointly and severally by these presents.

Signed with our hands and sealed with our seals this _____ day of _____, 19__.

The condition of the foregoing obligation is such that, whereas the said principal has been granted under the act of February 25, 1920, Public No. 146, a permit (Serial number _____) to prospect for oil and gas for two years upon the following lands: _____ on condition that the permittee shall (*a*) repair promptly, so far as possible, any damage to the oil strata or deposits resulting from improper methods of operation; (*b*) reimburse any entryman or owner of any portion of said lands heretofore entered with a reservation of the oil and gas deposits to the United States made pursuant to the act of July 17, 1914 (38 Stat. 509), for any damage to the crops and improvements of such entryman or owner resulting from drilling or other prospecting operations.

Now, therefore, if said principal shall promptly and in all respects comply with said conditions, then the above obligation shall be void and of no effect; otherwise

and in default of full and complete compliance therewith the said obligations shall remain in full force and effect.

Signed, sealed, and delivered in the presence of:

Name and address of witness:

------ ------ ------ ------ [L. S]
Principal

------ ------ ------ ------ [L. S.]
Surety.

Attorneys in Fact.

In making applications for lease or permit corporations may act by attorneys in fact. Individuals and associations of individuals should execute their own papers.

Limitation of Holdings.

A corporation (except under the relief sections) may not have an interest in more than three leases, either directly as a lessee, or indirectly as a stockholder in a corporate lessee. An individual may hold stock in any number of corporations holding leases provided his stock interests do not represent a greater acreage than 2560 in the same producing structure, or 7680 acres in the same state.

Alien Ownership.

Aliens may not have any direct holding of lease under the oil leasing act, but may be stockholders in American corporations holding leases, provided the laws of their country do not deny like privilege to American citizens. American corporations, some of whose stock is owned by aliens, may make application for lease with a full disclosure of the residence and citizenship of its stockholders, and the department will then determine whether a lease may be granted.

Conflicting Preference Rights Under Sections 19 and 20.

The preference right attaches to the claim first initiated and legally maintained. A locator of a mining claim who has complied with all the provisions of section 19 of the act will be entitled to a preference right over a homestead entryman whose entry was made after the location, the homesteader, however, being entitled to hold the surface right. If the homestead entry was made prior to the date of the placer location, the homestead claimant will have the superior right, except in the case of a stock-raising homestead, wherein all minerals are reserved to the United States.

Permit for Unwithdrawn Land Covered by Agricultural Entry.

No permit will be granted until entryman has elected to take patent with reservation of oil and gas to the United States. If such a waiver is filed, entryman may then exercise his preference right, if any, to permit for lands covered by such entry.

Preference Rights Under Section 20.

Preference rights under section 20 exist in cases where entry was made prior to February 25, 1920, for unwithdrawn or unclassified lands, without any reservation of the minerals by the United

States, and thereafter the claimant files a waiver of his right under the entry to the oil or gas. No preference right exists where land is covered by stock-raising entry, nor where entry is made subject to the act of July 17, 1914, with oil and gas reservations.

Assignability of Permits.

Assignment of a mere right to a permit will not be recognized, but after permit is granted it may be assigned upon consent of the Secretary of the Interior first had and obtained.

Incontiguous Tracts.

Incontiguous tracts within a limited radius may be included in a permit where conditions are such that, because of prior disposals, a reasonable area of contiguous land can not be procured.

Pending Application for Permit, Land Designated as Oil Structure.

Where after application under section 13 for a permit and before permit is granted the land is designated as within the structure of a producing oil or gas field, permit can not be allowed.

Preference Right Under Section 20.

A permit to prospect will be granted an applicant entitled thereto under section 20 of the act, notwithstanding the land is part of a producing oil structure, but only one permit may be granted in the same structure to the same applicant.

Carey Act Segregation as Affected by Leasing Law.

The lands in a Carey Act segregation come under the provisions of section 2 of the oil and gas regulations, and permits and leases may be granted for such lands, subject to such stipulations and requirements as the government may impose for the protection of the reclamation project, to the end that the best development of the lands, both for mineral and agricultural purposes, may be accomplished.

Neither the state nor its contractor would be entitled to any preference right under section 20 of the act, and whether a Carey Act entryman would have such a right would depend upon the conditions affecting his entry being such as to bring him within the provisions of section 20.

Office Practice—Conflicting Applications.

The issuance of a permit should be deferred, where all is regular and the applicant appears entitled to the permit, until the conflicting applicants have been notified that their applications have been rejected, because subsequent in time, subject to the right to show cause or to appeal within 15 days from receipt of notice.

Posting Notice by Agent.

Under the law, the action of an agent in posting notice is the action of his principal, but the application for permit may not be executed by agent, unless applicant is a corporation.

Permits of Corporations as Affected by Stockholders' Permits.

The maximum number of permits to a corporation under section 13 of the act is not limited by permits of individual stockholders, but a corporation may not have an interest in more than three permits in same state, nor in more than one in the same geologic structure, directly or indirectly. An individual may hold a direct interest in not more than three permits and his total interest as permittee and stockholder may not exceed an aggregate of 7680 acres in the same state, or 2560 acres in the same geologic structure.

Preference Right Permits to Qualified Assignees.

Section 19 of the act of February 25, 1920, is construed to permit qualified assignees since October 1, 1919, to secure preference right permits, but no such transferee will be permitted to hold permits exceeding 2560 acres for such lands in the same geologic structure, nor more than three times that area in the same state.

Permits in Alaska.

The same rule applies in Alaska as in the states; that is, not more than one permit in same structure.

Rights Under "Paper Locations."

Arguments have been presented in favor of a construction of section 37 of the leasing act, that would have the result of validating so-called "paper locations" of placer mining claims, and assuring the ultimate right to absolute patent to such claims in case of discovery. Such locations consist merely of setting stakes to indicate the boundaries, posting a notice, and perhaps filing that notice in a proper recording office. It is understood that practically all the public domain having known possible prospective value for oil, is covered by such locations. It is not believed that congress had any such intention or that the language of the act justifies any such conclusion.

Under the express requirements of the mining laws and the decisions of the courts covering a long period of years, *discovery of mineral* has been the sole basis for the location of a mining claim. Without such discovery, the mere posting of notices and marking the boundaries creates no right whatever.

The mining law gives the right to any citizen to explore the public domain for the purpose of finding mineral; hence, the courts have protected a citizen in actual, physical possession of a prospective claim on the public domain, while he is engaged in diligent prosecution of work leading to the discovery of mineral, but this is as far as the courts have gone. As applied to oil lands, this rule was well stated by the Supreme Court of California, in the case of McLemore vs. Express Oil Company (158 Cal. 559), in the following language:

> But where the location is incomplete no question of assessment work is involved. What the attempting locator has is the right to continue in possession, undisturbed by any form of hostile or clandestine entry, while he is diligently prosecuting his work to a discovery. This diligent prosecution of the work of discovery does not mean the doing of assessment work. It does not mean any attempted holding, by cabin, lumber pile, or unused derrick. It means the diligent, continuous prosecution

of the work, with the expenditure of whatever money may be necessary to the end in view.

These propositions of law were reiterated by the United States Supreme Court as recently as March 15, 1920, in the case of Cole vs. Ralph.

From the foregoing it will be seen that no rights whatever could be obtained by mere staking and posting unless such act was followed up with diligent and continuous work leading to discovery. Section 37 of the new leasing act excepts from the operation of that act "valid claims existent at date of passage of this act and thereafter maintained in compliance with the laws under which initiated, which claims may be perfected under such laws, including discovery." Obviously a *valid* claim under the former law is one that the courts and the land department will protect and respect as against the claims of others. The mere staking and posting of notices do not constitute such a claim, and the regulations so hold.

Any other view as to the construction of section 37 is inconsistent with the provisions of other sections of the leasing law. Section 19 provides for relief, so-called, for those persons who initiated claims on the public domain at a time when the lands were not withdrawn or classified, and who, at the date of the act, had not perfected such claims by discovery, and it further provides that where such a claimant had expended an amount equal in the aggregate to $250 toward the development of his claim, such claimant, if in good faith and the claim was initiated prior to October 1, 1919, would be entitled to a prospector's permit for the area embraced in his claim.

The provisions of the relief section (18, 18*a*, 19, and 22), were the subject of extended consideration by the committees of congress, and it is clear that the provisions of section 19 are just as far as congress intended to go in the protection of claims and locations of the class here under discussion. To construe the act as validating mere "paper locations" would be placing congress and this department in the position of saying that one who had expended $250 on his claim would be entitled only to a prospecting permit, while one who had only a stake and notice would be left with the privilege for an indefinite time of ultimately getting absolute title. It is further argued that under the act claimant has the option of taking a relief permit under section 19 or standing on his "paper location" under section 37. One might as logically argue that claims for relief under section 18, over which there has been so much controversy, may now go to absolute patent by virtue of section 37. Congress never contemplated any such anomalous situation.

If the view urged in these arguments were adopted there would be little use for a leasing act for oil lands outside the withdrawn areas, and perhaps for lands within such areas. The purpose and policy sought to be accomplished by this important legislation would be largely negatived, and the states and the Reclamation Service would be deprived of funds they are counting on for development purposes. Moreover, there is no practical necessity for the construction urged to protect any legitimate interest. The new law is liberal in the extreme in giving all good-faith claimants, who have made any material expenditures on the ground, fair and reasonable

opportunity to transmute such claims into permits and leases under the new law under far more practical working conditions than existed under the former laws.

Oil Land Leases—Stock-raising Homesteads.

The question has arisen as to whether or not the provisions of section 20 of the leasing act are applicable to lands covered by stock-raising homestead entries.

Section 20 is one of the so-called relief sections of the law, all of which sections are based upon alleged equities of the persons to whom a preference right to a permit or lease is accorded. It was designed to recognize the equities of persons who had gone upon the public domain and made homestead entries under the 160- or 320-acre homestead law, neither of which contains any reservation of minerals, upon the therory and under the belief that they were obtaining an unrestricted title to the land. Because of a *subsequent* withdrawal or classification of the land as mineral after the allowance of their entries, and after they had spent their time and money upon the land, they were under the necessity of either losing the land entirely or accepting a patent under the provisions of the act of July 17, 1914, reserving the oil and gas deposits in the land to the United States. No such equity or reason exists in the case of entries under the 160- or 320-acre homestead law made upon lands *theretofore* withdrawn or classified as mineral, because the entryman knew at the time he made the entry that the mineral was known and reserved to the United States, and the most he could obtain was a patent expressly excluding the oil and gas deposits. This is true of all stock-raising homestead entries; for by the terms of the act itself all minerals within the land are expressly reserved to the United States, together with the right to enter upon the lands, mine and remove the same.

Lands within stock-raising homestead entries need not be withdrawn or classified for the purpose of preventing disposition of minerals under the agricultural land laws, because the minerals are reserved in the law itself. It is, therefore, clear that congress, when it used in section 20 of the leasing act, the words "lands bona fide entered as agricultural and not withdrawn or classified as mineral at the time of entry," had in mind only the entries under the 160- or 320- acre homestead law, which contains no reservation or classification of mineral, and where *subsequently*, by reason of a withdrawal or classification, the entryman was, as stated above, under the necessity of accepting a restricted patent. Any other construction of the statute would involve the disregarding of the language "and not withdrawn or classified as mineral at the time of entry."

The regulations specifically state that the preference right under section 20 of the act exists only where the land was entered prior to withdrawal or classification, and *subsequent* to entry was withdrawn or classified as oil or gas bearing in character. This clearly could have no application to entries under the stock-raising homestead law, where all minerals are reserved and where no withdrawal or classification is necessary.

Preferential Rights of Agricultural Claimants.

Whatever preferential rights homesteaders or other agricultural entrymen as such may have to oil permits or leases must be found in section 20 of the act. While this section is not as clear and specific in some respects as might be desired, it is apparent that the class of entrymen or patentees on which congress intended by this section to confer a preference right is those who made their entries when the land was *not withdrawn or classified* as mineral, and who were therefore permitted to make their entries without any reservation of the mineral to the government, but were or will be compelled to take a patent with the reservation because of a withdrawal or classification of the land, or because in the meantime the land has become of known mineral character, before submission of final proof. It is also apparent that this section is in the nature of a relief provision, designed to take care of those who found themselves in the situation above described at the time the act was passed, and not intended to provide generally for the disposition of mineral rights under the homestead law in the future.

With these general propositions in mind, the following specific statements may be made:

1. If the land was withdrawn or classified *at the time of entry* so that the entry was made with a reservation of the mineral, there is no preference right. Conversely, to entitle the homesteader to a preference right the entry must have been properly made *without a reservation* of the mineral.

2. There can be no preference right on an entry allowed after February 25, 1920. See section 12 of the regulations.

3. There can be no preference right on a stock-raising entry under the act of December 29, 1916, for under that act all entries are made with a reservation of the mineral.

4. If the homestead entry was made without reservation of the mineral, but after the lands were of known mineral character, and for the purpose of acquiring mineral rights, there is no preference right to a permit because (*a*) such an entry should have been made with a reservation of the mineral and the requisite nonmineral affidavit on which the entry was procured was fraudulent, and (*b*) the entry is not "of lands bona fide entered as agricultural."

5. But where one has an original entry under the 160- or 320-acre law and an additional entry under the stock-raising (640-acre) law, the entryman will have the same rights under the original as he would have had had he not made the additional.

6. Where one has an entry without a reservation of the mineral, nobody (not even the entryman himself) may acquire a permit or lease for the mineral so long as the entry stands in that shape.

7. But if the entryman in the case last above mentioned files a waiver of the mineral rights in the land, then he may exercise his preference right, if he has any, and if not, others may file application for a mineral permit or lease.

8. The "reservation" of the mineral above referred to is pursuant to section 2 of the act of July 17, 1914 (38 Stat. 509), which provides that the mineral occupant shall pay any damage caused to the agricultural claimant.

9. Where a patented entry, or one on which final certificate has issued, has been sold or transferred, the transferee would have the same rights as the entryman, provided he acquired the land before January 1, 1918, but if he acquired it after that date, there would be no preference right in anybody.

10. A patentee, or entryman with final certificate, with a reservation of the mineral to the government, who has a preference right can not withhold the land from development indefinitely. Section 12 of the regulations provides that if anybody else applies for a permit on the land, the preference-right man shall be given notice and allowed 30 days within which to exercise his preference and apply for a permit himself; otherwise he will be out.

11. The preference-right claimant must be qualified to take a permit under the law the same as anybody else; for instance, an alien transferee of patented land

could not get a permit or lease; one who has already received the limit of permits allowed could not get a permit.

12. The matter of whether the agricultural entry on which a preference right to a permit is predicated is within or without a known producing structure cuts no figure in connection with the preference rights here under consideration, provided that only one permit may be granted to the same structure.

13. In case of conflict between a preference-right claimant under sections 18 and 19 and one under section 20 the one would prevail whose rights were prior in their lawful inception.

Conflicts Between Nonmineral Claims and Oil Placers.

When an otherwise valid oil placer location is perfected by discovery the land is not subject to other appropriation so long as the mining claim is maintained, and should it be entered or applied for under some other law prior to the filing of an application for patent by the mining claimant the burden of protecting his claim by contest will rest upon him. This is necessarily so, as the land is not segregated from record entry by a mere mining location of which the land department has no record.

An oil placer location, perfected by discovery, laid over land embraced in a prior, valid, subsisting homestead entry, is ineffective so long as the homestead stands. (Prior to the act of July 17, 1914, the mineral claimant could contest the homestead and cause its cancellation; under that act the homesteader may retain surface rights and the mineral is automatically withdrawn; and under the leasing act the homesteader might have a preference right to a permit for the mineral.) A stock-raising homestead is an exception to this rule, for all minerals are reserved therefrom, and the oil deposits could have been located under the placer law up to February 25, 1920.

A mere "paper" oil placer location (that is, one without a discovery) will not prevent a homstead entry for the land, but where the claimant of a "paper location" is on the ground in diligent prosecution of work leading to discovery at the time the land is homesteaded, he may by contest defeat the homestead entry.

The allowance (after Feb. 25, 1920) of a homstead entry on land covered by valid rights to relief permits or leases under sections 18 or 19, is entirely within the discretion of the Secretary of the Interior.

Reservation of Mineral—When Required.

Where a homestead entry (not under the grazing act) is made without a reservation of the oil to the government and the land is withdrawn or classified as oil land before completed final proof is submitted, the entryman must take patent with a reservation of the oil, unless he can procure a reclassification of the land by the department or a removal of the withdrawal, or unless he can show at a hearing (the burden of proof being on him) that the land was not of a known mineral character at date of final proof.

But where, in the case last stated, the withdrawal or classification as mineral was not made until after final proof was submitted, the entryman will be entitled to a patent without a reservation, unless the government can show (the burden of proof being on the government), at a hearing if necessary, that the land was of known mineral character at the date of final proof. If the government can show

this, the result will be the same regardless of whether there has been a withdrawal or classification.

Interests Under Drilling Contracts.

A drilling contract carrying with it a right in the proceeds, or in the land itself, will be considered an interest in the lease, and when it comes time to grant a lease such drilling contractor will have to show himself qualified to take a lease. In all cases where the drilling is performed under contract the nature and terms of the contract must be disclosed before lease is granted.

As to permits, the situation is different. If a contractor desires to be recognized by the department in connection with a permit, it will be neccesary for him to file his contract for approval; but if he so desires he may explore the land under contract with the permittee and bring his contract to the attention of the department only when and if he wishes to be recognized as being interested in such lease as may be applied for.

Discovery on Adjoining Claims.

In case of two claims that adjoin, it is necessary to have discovery on each claim to secure lease for both under section 18. If the discovery is only on one claim, the lease must be confined to the limits of the claim containing the discovery.

Right of Assignees to a Lease Under Section 18.

Good faith locators or their grantees, whose right to a lease is governed by the provisions of section 18 of the act, may transfer their interests to contractors, assignees, or lessees who were in undisputed possession prior to July 1, 1919; and such owners may then jointly apply for a lease for their aggregate holdings or they may make a division of the area and each seek a separate lease for his individual holdings.

Discovery Applicable to All Parts of Location.

A discovery on any part of a placer claim used as a basis for relief under section 18, 19, or 22 of the act will be deemed applicable to every part thereof for leasing purposes.

Only Citizens May Obtain Permits or Leases.

The oil and gas leasing bill provides for the issuance of prospecting permits and leases to citizens of the United States, associations of such citizens, corporations organized under the laws of the United States or of any state or territory thereof, or municipalities. It follows from this that no one but a citizen can obtain a lease or permit, but aliens may be stockholders in some cases.

Citizenship of Agent Immaterial.

A notice of a prospecting permit may be posted by an agent or attorney in fact in the name of his principal. The citizenship of such agent is immaterial.

Oil Claims Antedating Leasing Act.

Oil placer claims for unwithdrawn and unclassified lands upon which discovery was made prior to the enactment of the mineral leasing law are not, in the absence of fraud, affected thereby so long as the claimant complies with the law. If discovery was not made, the claimant in order to protect his right to a patent, must have been engaged in diligent work leading to a discovery at the date of the act and must be able to show that he has continued such work to discovery.

Preference Right of State Grantee.

To entitle the grantee of a state to a preference right under section 20 of the mineral leasing law, the selection must have been approved and transferred by the state prior to January 1, 1918.

(Amended July 14, 1922, by substituting the word "completed" for "approved." 49 L. D. 180.)

When the Mineral Leasing Act Took Effect.

Under the general rule of law applicable to such cases, the act of February 25, 1920, was in force and operation during that entire day, subject, however, to the privilege of any person having a substantial right which would be affected by the application of the general rule to prove, if he can, the exact time of approval.

The act of February 25, 1920, supra, section 13, authorizes the Secretary of the Interior, under such rules as he may prescribe, to grant to qualified persons a prospecting permit "upon not to exceed 2560 acres of land," and allows would-be applicants to initiate a preference right, good for 30 days, by posting notice upon the ground. This statute and the rules and regulations promulgated thereunder do not, however, confer upon such locators a right to obtain a prospecting permit for the entire acreage described in any notice of location. The statute simply fixes the maximum amount which may be embraced in a single permit, 2560 acres.

Paragraph 2 of the regulations approved March 11, 1920, states that the granting of such a permit "is discretionary with the Secretary of the Interior, and any application may be granted or denied, either in part or its entirety, as the facts may be deemed to warrant."

Subject to the foregoing, the following rule is announced for the guidance of the officers of the Interior Department and of parties in interest in the disposition of conflicts and controversies arising out of locations and applications made or filed during the day of February 25, 1920:

All locations made or applications filed, pursuant to section 13 of the act of February 25, 1920, at any time during the day of February 25, 1920, will be held, treated, and regarded as simultaneous, and in case of conflict of location and application, in whole or in part, between two or more qualified applicants, all such applicants will be allowed 30 days from notice within which to compromise their differences by division of lands or otherwise, in default of which this department will make such division or disposition as the facts may warrant.

Limitations Under Section 27.

It will be noted that section 27 seems to apply to two classes of interests, namely, those held directly from the government and those held indirectly through ownership of stock in corporations. As to leases held directly, there does not seem to be much doubt that the same person or corporation may not at the same time have more than three leases in any one state, or more than one lease within the geologic structure of the same producing oil or gas field.

The section further provides that "no corporation shall hold any interest as a stockholder of another corporation in more than such number of leases." This language, taken in conjunction with the language preceding it, seems to hold that a *corporation* may not have an interest in more than three leases, either directly as a lessee, or indirectly as a stockholder in a corporate lessee. True, the next clause provides that "no person *or corporation* shall take or hold any interest or interests as a member of an association or associations, or as a stockholder of a corporation or corporations," in which the aggregate leasehold interests exceed an amount equivalent to the maximum number of acres allowed to one lessee. It is clear that as to a corporation the clause last quoted is inconsistent with the clause first quoted, and as the clause first quoted is more restrictive as to a corporation than the following clause, it is considered that the former controls. But this leaves an individual with the right to hold three leases directly, and, at the same time, to have a stock interest in corporations having leases, provided his direct and indirect holdings do not exceed the maximum for one person, namely, not exceeding 2560 acres in the same structure or 7680 in the same state. It follows also that a person may hold stock in any number of corporations holding leases provided his stock interests do not represent a greater acreage than that above stated.

While under the regulations substantially the same restrictions apply to permits as apply to leases, the number of leases one has will not necessarily limit the number of permits he may have, but when a permit ripens into a lease, then the restrictions as to leases apply to both.

Bond With Preference Right Application.

In the case of a preference right application under section 19, the bond may be filed therewith, or deferred until permit is authorized.

Articles of Incorporation.

Under section 25 of the regulations, a certified copy of the articles of incorporation should be filed with the original application, but an uncertified copy is sufficient to accompany the duplicate.

Rights of Association in Geologic Structure.

An association may hold only one permit in the same geologic structure, and the interest of a member of different associations may aggregate 2560 acres in the same structure.

Ceded Ute Indian Lands Subject to Leasing Act.

By departmental decision of August 9, 1920, it was held that the oil and gas deposits contained in that portion of the Ute Indian Reservation in the State of Colorado formerly occupied by the Uncompahgre and White River Utes, ceded to the United States by the confederated bands of Ute Indians by the treaty of March 2, 1868, as amended, accepted, and ratified by the act of June 15, 1880 (21 Stat. 199), and opened to disposal under the provisions of the act of July 28, 1882 (22 Stat. 178), are subject to disposal under the mineral leasing act.

Uintah Ceded Indian Lands Subject to Leasing Act.

The Uintah Indian lands opened to sale and entry by act of May 27, 1902 (32 Stat. 263), are subject to the operation of the leasing act of February 25, 1920.

Procedure in Relation to Agricultural Claims in Conflict With Permits or Leases, or Subject to Preferential Rights.

DEPARTMENT OF THE INTERIOR,
GENERAL LAND OFFICE,
Washington, October 6, 1920.

Registers and Receivers,
United States Land Offices.

GENTLEMEN: Instructions have been requested from several local offices as to the proper procedure to take in connection with nonmineral applications or selections filed for lands embraced in applications for prospecting permits or leases, or which may be subject to preference rights, under the leasing act of February 25, 1920.

A prospecting permit is granted in contemplation of a future lease for a part or all of the same land in case of discovery; hence as to subsequent nonmineral entries, with a reservation of the oil or gas to the United States, the lands embraced in a prospecting permit should be treated the same as if embraced in an oil or gas lease, with a reservation to the United States of the right "to lease, sell, or otherwise dispose of the surface of the lands embraced within such lease under existing law or laws hereafter enacted, in so far as said surface is not necessary for the use of the lessee in extracting or removing the deposits therein," pursuant to section 29 of the leasing act. As the placing of such a reservation in a lease is made discretionary with the Secretary, it necessarily follows that any disposition of the surface of lands embraced in permits or leases is by the act left entirely discretionary with the land department, to be determined on the facts of each particular case.

The so-called relief sections of the act (18, 18*a*, 19, and 22) recognize equitable rights in the owners and occupants of claims initiated under the general mining laws and accord to them a preference right which may be exercised by applying within the time and in the manner prescribed by said sections for oil or gas leases or permits. These

prior rights or claims, if asserted within the time accorded the claimants by the statute, are superior, both in time and right, to nonmineral applications or selections having their inception subsequent to the leasing act. It is apparent also that the allowance of nonmineral appropriation of the surface of vacant lands in producing structures will interfere with the leasing of such lands by competitive bidding under section 17 of the leasing act.

You are therefore directed:

LANDS OUTSIDE PRODUCING STRUCTURES.

(1) In all cases of applications to make nonmineral entries or selections of lands *outside* of areas which have been designated by the department as within the geologic structures of producing oil or gas fields, and which lands are also embraced in applications for prospecting permits or in permits granted, such nonmineral applications should be received, noted on your records, suspended, and transmitted to the Commissioner of the General Land Office for instructions. If in any case such nonmineral entry or selection shall be allowed by you on instructions from the Commissioner, the same will be with a reservation of the oil or gas to the United States, and subject to the rights of the permittee or lessee, as the case may be, to use so much of the surface of such land as is necessary in extracting and removing the mineral deposits, without compensation to the nonmineral entryman for such use, in accordance with section 29 of the leasing act.

LANDS IN PRODUCING STRUCTURES.

(2) You will reject all applications to enter, file upon, or select under the nonmineral land laws, lands which have been or shall be designated by the department as being *within* the known geologic structures of producing oil or gas fields, pending consideration by the department of the agricultural character and value of such lands and a determination as to whether the surface of the land is of agricultural character and value and may be disposed of without detriment to the public interest.

CONFLICTS WITH PREFERENCE RIGHTS.

(3) All homestead entries or other nonmineral filings or selections *allowed* prior to receipt of these instructions and subsequent to February 24, 1920, which are found to be in conflict with preference rights timely asserted under the remedial provisions of the act of February 25, 1920, shall be suspended pending the consideration of the application for the permit or lease, and the parties in interest so advised. If the permit or lease be allowed or granted, such homestead entry or other allowed nonmineral application or selection will be canceled if the lands are within designated geologic structures of producing oil or gas fields. If outside of such designations, the agricultural entries, applications, or selections will be allowed to stand or will be canceled in the discretion of the department, as provided in section 1 hereof.

LIABILITY FOR DAMAGES.

(4) Your attention is drawn to the distinction which exists under the law with respect to the rights of permittees and lessees of mineral deposits in cases where the nonmineral entry or selection is allowed subsequent to the application for permit or lease or subsequent to February 25, 1920, in conflict with rights recognized by sections 18, 18*a*, 19 and 22 of the leasing act, and those cases where the nonmineral entry, filing, or selection with a reservation of the mineral (either at time of entry or later) under the acts of July 17, 1914 (36 Stat. 509), or December 29, 1916 (39 Stat. 862), precedes the permit, lease, or mineral right, for in the latter case the nonmineral claimant is entitled to be reimbursed for all damages to crops and improvements by reason of the operations of the permittee or lessee, as provided in those acts, while in the former the respective rights of the mineral and surface claimants are governed by section 29 of the leasing act.

Very respectfully,

CLAY TALLMAN,
Commissioner.

Approved October 6, 1920.

JOHN BARTON PAYNE,
Secretary.

NOTE.—For regulations governing oil and gas permits and leases in Alaska, see 49 L. D. 196, 207.

Regulations Governing Payment of Annual Rental Under Oil and Gas Leases Required by Section 14 of the Act of February 25, 1920.

[Circular No. 795.]

DEPARTMENT OF THE INTERIOR,
GENERAL LAND OFFICE,

Washington, D. C., December 8, 1921.

Registers and Receivers,
United States Land Offices.

Section 14 of the act of February 25, 1920 (41 Stat. 437), relative to oil and gas leases, provides for the payment in advance of an annual rental of $1 per acre in cash on the acreage covered by the lease, the rental paid for any one year to be credited against the royalties as they accrue for that year.

For the purpose of establishing a uniform practice of handling this rental problem the following rules are prescribed:

1. On the first day of each year of the lease, reckoned from the date stated in the first paragraph thereof, the annual rental becomes due and payable in cash. This must be paid directly to the receiver of public moneys of the land district in which the land is situated. (See Big-4 Oil Co. 49 L. D. 482.)

2. In the event the royalty is to be paid in cash, the lessee shall deduct from royalty payments to the local receiver the amount of the rental paid for that year from the first royalty due, until the accrued royalty equals the annual rental paid.

3. If the royalty is to be paid partly in crude oil and partly in cash, the entire deduction necessary to offset the rental paid shall be taken from the first accrued cash royalty only.

4. If the royalty is to be paid in kind only, the lessee shall deduct from the first accrued royalty product such quantity thereof as will, at the approved selling price on the date of deduction, equal in value the cash rental paid for that year.

Amended February 24, 1923, to read as follows:

"4. If the royalty is to be paid in kind only, the lessee shall deduct from the first accrued royalty product such quantity thereof as will, at the approved selling price on the date of deduction, equal in value the cash rental paid for that year: *Provided, however,* that by consent of the lessee the amount of annual rental paid in any one year may, in lieu of being refunded in oil, continue to be held by the government as a deposit through succeeding years subject to correction if the acreage of the lease shall change or to refund of any amount due when the lease shall terminate. 49 L. D. 459."

5. The date, amount and character of deduction made to offset rental payments must be shown in the itemized monthly statement required in the lease covering the month when the deduction is made.

WM. SPRY,
Commissioner.

Approved:
F. M. GOODWIN,
Assistant Secretary.

Applications for Leases by Oil and Gas Prospecting Permittees Under Section 14, Act of February 25, 1920.

Instructions.
[Circular No. 823.]

DEPARTMENT OF THE INTERIOR,
GENERAL LAND OFFICE,
Washington, D. C., May 5, 1922.

Registers and Receivers,
United States Land Offices.

In order to expedite and coordinate the work of the General Land Office and of the Bureau of Mines in acting upon applications for leases filed under section 14 of the act of February 25, 1920 (41 Stat. 437), by the holders of oil and gas prospecting permits, you are instructed as follows:

LEASES FOLLOWING PERMITS.—An application for lease as a reward for discovery by permittees shall be filed in duplicate in the United States land office of the district in which the land is situated. The register and receiver will immediately transmit the original to the Commissioner of the General Land Office, by special letter, and the duplicate to the deputy supervisor of the Bureau of Mines having jurisdiction in the district.

Such applications should set out the following items:

(1) Serial number of permit.

(2) Name and address of permittee.

(3) Name and address of operator.

(4) Subdivisions on which discoveries have been made. Character of discoveries. Exact date of discovery.

(5) Number and definite location of each well brought in.

(6) Complete itemized production statement by calendar months from first discovery to date of application.

(7) The applicant must give description of the land for which he desires a lease at the minimum royalty accorded discoverers under permits. He must also at the same time apply for lease of the remaining lands covered by the permit, or waive claim to his preference right to lease same or such part thereof as he does not desire to lease. A permittee under section 13, and a permittee under section 19 of the act (for lands not within the known geologic structure of a producing oil and gas field at the date the permit application was filed) is entitled to lease one-fourth of the land in the permit, or at least 160 acres, if the permit includes that area, at a flat royalty of 5 per cent. If a permit under section 19 includes areas which were at the date the permit application was filed partly inside and partly outside the known geologic structure of a producing oil and gas field, the permittee is entitled to select one-fourth of the area for lease wholly outside, or wholly inside, or partly inside and partly outside the known structure, *provided, however*, that the royalty on lands within the known structure shall in no event be less than 12½ per cent, and *provided, further*, that the permittee is entitled to a lease at 5 per cent flat royalty upon so much of the outside area as does not exceed one-fourth of the total area covered by the permit.

A permittee under section 20 of the act is entitled to lease one-fourth of the area of land embraced in his permit or at least 160 acres of said lands, if there be that number of acres within the permit, at a flat royalty of 5 per cent, whether the land covered by the permit, or any part thereof, was within or without the known structure of a producing oil and gas field at the date the permit application was filed.

(8) A statement of what interests are to be held under the lease, together with (a) the necessary contracts, assignments, etc., for the approval of the Secretary of the Interior; (b) proof of citizenship of any assignee or interested party by affidavit of such fact if native born, or, if naturalized, by certified copy of the certificate of naturalization on the form provided for use in public land matters unless such copy is already on file, or, if a corporation, by certified copy of the articles of incorporation, and a showing as to the residence and citizenship of its stockholders; (c) a statement as to interests held by the assignee or interested party in leases and permits in the geologic structure of the same producing oil or gas field. If the showings required under (a) and (b) have already been made, a reference thereto may be made giving the land office district and serial number of the case in which the showings were made.

The permittee must exercise his preferential right to the remaining part of the permit at the time of application for lease of the one-fourth part of the area affected.

RELINQUISHMENTS AND BONDS.—Relinquishments of permits will not be accepted and bonds released until all requirements under the permits and the regulations have been fulfilled. When any drilling has been done on the property, the relinquishment should be approved by a representative of the Bureau of Mines or other person so designated by the Secretary of the Interior.

ABANDONMENT OF WELLS.—Upon plugging or abandoning a well drilled under a permit or lease, the casing shall not be drawn from the well until authority has been obtained in writing from the deputy supervisor of the Bureau of Mines or other authorized agent of the Department of the Interior.

SALES CONTRACTS.—Sales contracts submitted for the approval of the Secretary of the Interior under paragraph 2 (d) of the lease must be filed in duplicate with the deputy supervisor of the Bureau of Mines having jurisdiction in the district in which the leased land is situated. The deputy supervisor will retain the duplicate in his files and forward the original, together with a copy of his report, to the Commissioner of the General Land Office. The original report of the deputy supervisor will be transmitted to the Director of the Bureau of Mines.

If a sales contract is submitted to any official of the Interior Department other than the deputy supervisor without its having been approved by the deputy or other authorized official, the contract should be returned to the person submitting it with instructions to file it in duplicate at the office of the local deputy supervisor, who will handle it in the regular manner.

WILLIAM SPRY,
Commissioner.

Approved:

E. C. FINNEY,
First Assistant Secretary.

APPENDIX—FORMS.

Form No. 1.

APPLICATION FOR PROSPECTING PERMIT.

(Act of Feb. 25, 1920.)

Department of the Interior

Land Office at _____.

State of_____. }
County of_____ } ss.

The Honorable _____

The Commissioner of the General Land Office:

And now comes_____ of _____, and hereby applies for a prospecting permit for the exclusive right for a period of two years to prospect for oil or gas upon the following described lands, situated in the State of_____, or so much of it as may be public lands, or may be presumed to contain deposits of oil or gas, belonging to the United States, to wit:

DESCRIPTION.

In support of this application_____sets forth the following facts:

(a) The applicant's name is_____, and his business address is_____.

(b) That _____ is a _____ citizen of the United States and he files herewith an affidavit substantiating such fact.

(c) That the applicant is not the holder of and has no direct or indirect interest in any other subsisting permit within the State of _____, but holds one permit to prospect for oil or gas in the State of _____.

(d) That the land for which the permit is desired is that heretofore described by legal subdivision.

(e) That the applicant believes that the land described in this application can be reasonably presumed to contain deposits of oil and gas.

That the prospecting permit applied for does not include to exceed 2,560 acres of land, and that said land is not within any known geological structure of a producing oil or gas field.

(f) That it is the intention of the applicant to explore the said tract by drilling of wells on such spot or spots as may be judged the most advantageous, and he will show due diligence in the said work of exploration, and that he has at his command the necessary capital for the intended drillings and explorations; that he is ready to satisfy the Secretary of the Interior as to his financial responsibility in such manner as the said Secretary of the Interior may desire.

(g) That the applicant is an_____and oil operator, has a recognized business standing and refers to the following:_____

_____

(h) That this application is accompanied by a bond of_____with

qualified surety in the sum of One Thousand Dollars ($1,000.00), conditioned against a failure of the permittee to repair promptly so far as possible any damage to the oil strata or deposits resulting from improper methods of operation.

This application is made in accordance with the terms of the "Act to promote the mining of coal, phosphate, oil, oil shale, gas and sodium on the public domain," approved February 25, 1920.

IN TESTIMONY WHEREOF, the said applicant_____ has caused his name to be signed as of the day and year first above written.

Subscribed and sworn to before me
this_____ day of _____

_____

_____
Notary Public

My commission expires_____

NOTE.—For documents to be filed together with 'Application' see Oil and Gas Regulations, par. 4, *supra*.

Form No. 2.

NOTICE OF LOCATION AND NOTICE OF INTENTION TO APPLY FOR PROSPECTING PERMIT UNDER ACT OF CONGRESS APPROVED FEBRUARY 25, 1920.

NOTICE IS HERBY GIVEN that I, _____, a resident of _____, and a citizen of the United States of America, over 21 years of age, have located and do hereby locate under the provisions of an act of the 66th congress of the United States, approved February 25, 1920, the following land situate in the _____, County of_____, State of _____, particularly described as follows, to-wit:

(DESCRIPTION.)

That said land is located for the purpose of prospecting thereon for oil and gas under the provisions of said act of congress and

NOTICE ALSO IS HEREBY GIVEN that I, _____, the locator above named, will within thirty (30) days after the date of posting this notice on said property above described, to-wit, within thirty (30) days after the_____ day of _____, make an application to the Secretary of the Interior of the United States, under and pursuant to the provisions of said act of congress, a permit to prospect for oil and gas upon said land.

WITNESS MY HAND AND SEAL this _____ day of_____.

_____(Seal)

WE HEREBY CERTIFY that the above and foregoing notice of location and notice of intention to apply for prospecting permit was posted on the above described land on a monument over four feet high, near the _____ corner of the _____ of Section _____, Township _____, Range _____, _____Base and Meridian, County of _____, State of _____, on the _____ day of_____, 19__.

_____
Witness.

_____
Witness.

Form No. 3.

PROTEST AGAINST APPLICATION FOR PERMIT.

IN THE UNITED STATES LAND OFFICE AT_____
IN THE STATE OF_____.
IN THE MATTER OF APPLICATION OF_____
Serial No._____ FOR PERMIT TO PROSPECT AND FOR OIL LEASE UPON THE_____
BASE AND MERIDIAN,

and

IN THE MATTER OF APPLICATION OF_____
Serial No._____ FOR PERMIT TO PROSPECT AND FOR OIL LEASE UPON THE_____ BASE AND MERIDIAN.

PROTEST OF_____

Comes now_____ of the County of_____ State of_____, whose post-office address is_____ in said_____ County of_____, and hereby protests and objects to the allowance of the application of the_____ (Serial No._____, Series) and of the application of_____ (Serial No._____, Series), each of said applications being for permit to prospect and for lease of the _____ Base and Meridian, under the act of congress approved February 25, 1920, and objects to and protests against the allowance of any part or portion of said applications or either of them, or of any other application of any person, except this protestant, relating to said land or any part thereof upon the following grounds, to wit:

1. That this protestant was on_____, at the time of the passage of said act of congress above mentioned, and for a long time prior thereto, had been and ever since has been and now is the owner of and possessed of a right to a patent to the said land above described and the whole thereof, under the placer mining laws of the United States.

2. That this protestant was at the time of the passage and approval of said act of congress, ever since has been and now is the owner of and possessed of a superior right to a lease under the provisions of said act of congress, to the said land described and the whole thereof.

The facts concerning this protestant's claims and interests in said land above described and his right to a patent and lease thereto as aforesaid, are in substance as follows, to wit:

1. This protestant is a _____ citizen of the United States, over the age of twenty-one years and now is and was at all times herein mentioned a resident of the State of_____. That he now does and did at all said times reside in_____.

2. This protestant now is and during all the times since a date long prior to July 3, 1910, has been, through himself and his predecessors in interest, continuously, a *bona fide* claimant of, and in the possession, undisputed by any other claimant prior to July 1, 1919, or since said last named date, of the following described parcel of land, and of the oil and gas wells located thereon, under claims initiated prior to July 3, 1910, by his predecessors in interest of the said placer mining claim hereinafter described, respectively upon the date hereinafter set forth, under the preexisting placer mining laws of the United States; and said

parcel of land, including all of the oil and gas wells located thereon have been claimed and possessed by protestant and his predecessors in interest continuously since prior to said 3d day of July, 1910, and for a long time prior thereto.

Said parcel of land so claimed and possessed as aforesaid is situated in the County of _____ of _____, and is more particularly described as follows, to wit:

_____ PLACER MINING CLAIM.

Being the _____ Base and Meridian.

3. The above described parcel of land was embraced in the Executive Order of Withdrawal of September 27, 1909, and ever since has remained so withdrawn. The said parcel of land is situated within Petroleum Reserve No. _____ and is not within any Naval Reserve.

4. That the origin and basis of protestant's rights and interests in and to said parcel of land and of his claim for relief under said act of congress are as follows:

That on the 16th day of February, 1909, the said parcel of land above described was public land of the United States open to location and appropriation under the laws of the United States relating to lands commonly known as "Placers" and lands chiefly valuable for petroleum, and on said date _____ and _____, each then being a citizen of the United States, duly located said parcel of land under said laws as the_____ PLACER MINING CLAIM and entered upon and took possession of said parcel of land, and did duly post thereon a notice of location, and did duly file for record, and there was recorded, on the _____, in the office of the County Recorder of _____, in Book_____, of the records of such county, said notice of location; that said notice of location was posted and filed and recorded by the above named locators in good faith and for the purpose of acquiring said land and the minerals contained therein for themselves and not for the benefit of any other person or persons.

That thereafter and during the month of _____, the said locators commenced the work of developing said land for oil and diligently continued in the possession of said land and in said development work at all times up to and including and after the _____, on which last mentioned date oil was discovered on said placer mining claim in paying quantities.

That thereafter by deed dated _____, and recorded_____, in the office of said County Recorder in Book _____ of Deeds, at page _____, Records of _____, this protestant became the owner of and acquired all of the right, title and interest of all of said_____ locators above named except _____, and now is the owner thereof. That the said _____ died on or about the _____ day of _____, and the whole of the estate of said _____ was by decree of distribution duly given, made and entered by the_____ Court of the _____, State of _____, County of _____, in the matter of the estate of _____, deceased, and in and by the decree of distribution in said estate, distributed to and vested in _____. Said decree of distribution was given, made and entered by said _____ Court on the _____, and was recorded in

the office of the said County Recorder _____, on _____ in Book _____ of _____ records of said County.

That thereafter by deed duly executed and delivered by said _____ to this protestant, this protestant acquired and became the owner of all the right, title and interest of said locator, _____, and of said _____, and ever since has been and now is the owner thereof. Said deed is dated _____, and recorded _____, in Book _____ of Deeds, _____, _____ records of said County.

All of which will more fully appear from the abstract of title covering said parcel of land filed herewith.

5. Commencing in the month of _____, the following work was performed and improvements made, purchased, constructed and installed on said parcel of land, to wit:

_____

(Insert details.)

That on _____, protestant and his predecessors in interest were and for several months prior thereto, had continuously been *bona fide* occupants and claimants of said placer mining location and were on said last mentioned date and for several months prior thereto had continuously been in the diligent prosecution of work leading to the discovery of oil or gas, or both, on said placer mining claim and diligently and continuously continued said work until subsequently oil was discovered in paying quantities on said placer mining claim as is hereinafter more particularly set forth.

6. That actual drilling was commenced on said land on the _____ day of _____, and was thereafter diligently continued until _____, when at a depth of _____ feet a discovery of oil and gas was made. The drilling of said well was continued diligently until _____, when at a depth of _____ feet a further discovery of oil and gas in paying quantities and in a producing stratum on the land covered by said location was made. Oil was produced from said well to the extent of _____ barrels. Said well was then cased off, drilling was resumed thereon and continued diligently to a depth of _____ feet.

7. That said well has been drilled, constructed and now exists upon said parcel of land, said well having been constructed, drilled and developed by this protestant and his said predecessors in interest. No other well or wells have been constructed or drilled or now exist upon said parcel of land or any part thereof. The said well is of the depth of _____ feet. Said well is not now actually producing oil or gas. After discovery of oil as hereinbefore set forth, and after said well has been drilled to said depth of _____ feet it was left in a condition so that the oil and gas therein would remain undisturbed and undamaged and said well was then capped so as to retain the oil and gas therein. Said well is in such a condition that oil may be produced therefrom and it is the intention of this protestant upon the allowance of the said application for lease, to commence the production of oil therefrom.

That the total amount of oil actually produced and taken from said well is _____. No technical test of the grade of said oil was made but protestant is informed and believes and therefore states that said oil was of from _____ degrees to _____ degrees baumé. No other oil or gas has been taken from said well and all said oil was either consumed for production purposes on the land or unavoidably lost.

That filed herewith and made a part hereof is a diagram marked Exhibit "A," showing the position of said well by course and distance from the nearest corner to the _____Base and Meridian.

8. That there has been expended in improvements, labor and equipment for the said development of and operations upon said parcel of land including the actual cost of the well thereon, hereinbefore described, a sum in excess of $_____. That a detailed statement showing the actual cost of the said well and of the improvements, labor and equipment for the development of and operations upon said land, is fully set forth in the application of this protestant for relief under said act of congress, which said application is Serial No. _____, and reference to which is hereby made.

9. That as appears from the abstract of title hereinbefore referred to, this protestant is and was on and prior to _____, subject to the paramount title of the United States, the owner of the aforesaid placer mining location covering said parcel of land above described and the whole thereof, and the oil and gas well located thereon. That there are no conflicting claims asserted prior to _____, or subsequent to said date against said placer mining location or said well located thereon, and protestant's possession is undisputed by any other claimant prior to _____; that this protestant has not acquired any interest in said parcel of land or in said location since _____, from any claimant, who, on or since said last mentioned date claimed or held more than the maximum area allowed the claimant under the provisions of section 18 of said act of congress.

Protestant has filed no application other than said application hereinbefore mentioned, for any lease or permit under said act of congress, and has no interest direct or indirect, in any other application for lease or permit by stock ownership or otherwise except that this protestant _____.

10. That said land is situated within the Geological Structure or oil field known as _____, in the County of _____, State of _____.

11. That protestant has not been guilty of any fraud and never has had and has not now any knowledge or reasonable grounds to know of any fraud in connection with said placer mining claim and has at all times acted honestly and in good faith; that protestant does now and did at all times believe that said placer mining location had been made in good faith by the several locators thereof and that the work done and improvements constructed upon said land constituted a compliance with the law and that said work and improvements followed by said discovery of oil, entitle this protestant to patent for said land.

12. That protestant on the _____, duly prepared and filed in the United States Land Office at _____, his verified application for lease of said parcel of land under said act of congress, which said application is now pending in the said United States Land Office and is Serial No. _____, Series; that in the preparation and filing of said application and as a part of the proceedings connected therewith, this protestant has complied with each and all of the requirements of the said act of congress, and the rules and regulations of the Department of the Interior thereunder, and has done and performed each and everything requisite thereunder to entitle him to a lease under the provisions of said act of congress, of all of said parcel of land above

described. A copy of said application has been heretofore served upon said _____, above named, and reference is hereby made to the original of said application and the same is made a part hereof.

WHEREFORE, this protestant prays that the applications of said _____, (Serial No. _____, Series) and of _____ (Serial No. _____, Series) for permit to prospect and for lease of said parcel of land above described, and each and every part thereof and all other applications adverse to the rights and claims of this protestant, be denied and dismissed and that the claims of this protestant as hereinbefore set forth be confirmed and that he may have such other and further relief as may be meet in the premises.

_____
Protestant.

_____
Attorney for Protestant.

State of_____)
County of_____) ss.

I, _____, being first duly sworn, depose and say: I am the protestant named in the above, and who executed the foregoing protest. I have read the said protest and know the contents thereof. The same are true of my own knowledge except as to matters therein stated on information and belief and as to those matters I believe it to be true.

_____

Subscribed and sworn to before me
this _____ day of _____.

_____
Notary Public
My commission expires_____

Form No. 4.

IN THE UNITED STATES LAND OFFICE.

_____.

In the Matter of Application of _____ _____, (Serial No. _____) for Permit to Prospect and for Oil Lease upon Section ____ Township ____ North, Range ____ West, _____ Base and Meridian, and In the Matter of Application of _____ _____ (Serial No._____), for Permit to Prospect and for Oil Lease upon _____ Section _____ Township _____ North, Range _____ _____ Base and Meridian.	NOTICE OF PROTEST OF _____.

To _____ above named, and to _____, its attorney, and to _____, above named:

You and each of you will take notice that _____, of the _____ of _____, State of _____, did duly make and file on _____, in the United States Land Office at _____, his written protest and objection to the allowance of the application of _____ (Serial No. _____) and to the allowance of the application of the above named _____ (Serial No. _____) for permit to prospect and for lease under the act of congress approved February 25, 1920.

That a copy of said written protest and objection together with a copy of the verified application of said _____ which was filed in said United States Land Office, at _____, and which application is referred to in said written protest, is attached hereto, and made a part hereof, and is herewith served upon you.

Dated this _____ day of _____.

_____

Attorney for said

_____.

Form No. 5.

BOND FOR MINERAL CLAIMANTS.

(Form approved by the Secretary of the Interior January 18, 1917, under Stock-raising Homestead Act.)

Know all men by these presents: That I, _____,
(Give full name of principal and sureties, and address of each.)
of _____, _____ County (or we, _____, of _____, _____County _____, and_____, of _____, _____ County, _____, as the case may be), a citizen (or citizens) of the United States, or having declared my (or our) intention to become a citizen (or citizens) of the United States, as principal (or principals), and _____, of _____, _____ County, _____, and _____ of _____, _____ County _____, as sureties, are held and firmly bound unto the United States of America, for the use and benefit of the hereinafter-mentioned entryman or owner of the hereinafter-described land, whereof homestead entry has been made subject to the act of December 29, 1916 (39 Stat., 862), in the sum of_____ dollars ($_____), lawful money of the United States, for the payment of which, well and truly to be made, we bind ourselves, our heirs, executors, and administrators, successors, and assigns, and each and every one of us and them, jointly and severally, firmly by these presents.

Signed with our hands and sealed with our seals this _____ day of _____, 19__.

The condition of this obligation is such that, whereas the above-bounden _____ has acquired from the United States the _____ deposits (together with the right to mine and remove the same) situate, lying, and being within the _____ of sec. _____, township _____, range _____, _____ land district, _____, and whereas homestead entry, serial No. _____ has been made at _____ land office, of the surface of said above-described land, under

the provisions of said act of December 29, 1916, by----------.

Now, therefore, if the above-bounden parties or either of them, or the heirs of either of them, their executors or administrators, upon demand, shall make good and sufficient recompense, satisfaction, and payment unto the said entryman or owner, his heirs, executors, or administrators, or assigns, for all damages to the entryman's or owner's crops or tangible improvements upon said homesteaded land as the said entryman or owner shall suffer or sustain or a court of competent jurisdiction may determine and fix in an action brought on this bond or undertaking, by reason of the above-bounden principal's mining and removing of the ---------- deposits from said described land, or occupancy or use of said surface as permitted to said above-bounden principal under the provisions of said act of December 29, 1916, then this obligation shall be null and void; otherwise and in default of a full and complete compliance with either or any of said obligations, the same shall remain in full force and effect.

Signed and sealed in the presence of and witnessed by the undersigned:

Residence ----------

Residence ----------

(Witnesses should give full names and addresses of each.)

Principal.

(The principal should sign first.)

Surety.

Residence ----------

Surety.

Residence ----------

(The principal and sureties should each sign full names and attach seals.)

NOTES ON THE LAW OF MINING LOCATIONS AND LANDS OPEN TO MINING IN CALIFORNIA.

By C. A. Logan.

One of the most frequent subjects of inquiry at the offices of this Bureau is the matter of mining law, as applied to the proper procedure for locating claims and holding same. The State Mining Bureau has published various bulletins on the subject, but stock of these is at present exhausted. The following notes are intended to make available for reference the main points of federal and state laws prescribing the methods to be followed in taking up mining claims on vacant public lands within this state, with some notes on lands available for mining.

These notes are based in the main upon those parts of the statutes which are of direct interest to the prospector who wants to make his location legal, and the writer has tried to avoid any technical or theoretical considerations not directly touching upon these details. Therefore no mention is made of the extralateral right nor of the other legal sinuosities that may arise. At the same time, it is believed that if the simple points mentioned are carefully attended to in making out the location notice and laying out the claim, the locator will avoid most of the dangers and vexations that later befall him when his location is faulty. The subject of mining law is a complex one, of such scope as to call for extended study by anyone who would master it. For a complete reference book on the subject the reader should consult Lindley[1] or one of the other standard authorities. An excellent reference book, much smaller but covering practical points, is Wilson's Mining Laws; also Ricketts' 'Manual of American Mining Law.'

In preparing the following notes the writer has drawn freely upon lecture notes taken while attending a course of lectures delivered at the University of California by William Colby, mining attorney, to whom acknowledgement is here made. Lindley on Mines has also been used, as have numerous federal and state circulars dealing with the details concerned. Cases could be cited for most of the points covered.

Summarizing the requirements of the United States and California statutes, as applied to lode mining locations upon vacant government land within this state, it will be noted that the following indispensable requirements must be met in order to fully protect the interests of the claimant:

(1) Discovery, the most vital factor, which must precede location or any rights thereunder. (Federal and state requirement.)

(2) The location must be marked upon the ground so that the boundaries of the claim or claims can be readily traced by anyone coming on the property and desiring to know what land is claimed. (Federal and state requirement.)

(3) Where the state or district mining law requires that a record of

[1]Lindley on Mines. A treatise on the American law relating to mines and mineral land, by Curtis H. Lindley, San Francisco, 1914.

the location be kept, the federal statute requires that this record must contain the following details:

1. The name of the lode or claim.
2. The name of the locator or locators.
3. The number of linear feet claimed in length along the course of the vein, each way from the point of discovery, with the width on each side of the center of the claim, and the general course of the vein or lode, as near as may be.
4. The date of location.
5. Such a description of the claim by reference to some natural object, or permanent monument, as will identify the claim located.

The state law incorporates these provisions of the federal statute, word for word.

(4) The state law (see paragraph 1426, *post*) specifies that a location notice must be posted upon the claim at the point where the discovery of valuable mineral is made, and that this notice must contain the information called for under the five divisions of the last paragraph.

(5) The state law also requires that a copy of the above notice must be filed for record within 30 days of the date of posting, in the office of the county recorder of the county in which the claim is situated.

Differing from the lode location requirements, the state laws regarding placer claims specify that where placer claims are taken by location according to the subdivisions of the public land survey and where the location notice specifies the legal subdivision of section, township and range, the boundaries of a claim so located and described need not be staked nor monumented. A prudent locator will, however, always stake his claim and when describing the same as above mentioned will ordinarily need at least an approximate survey to be sure the notice properly describes the land intended to be claimed.

Importance of Discovery in Initiating the Locator's Rights.

Upon a lode claim, discovery is defined as the actual finding of *ore in place*, not as float. The value of the ore is not a controlling factor, but the test is, according to Colby,[2] "would a prudent man be justified in spending money to develop it?" (See *Brook* vs. *Justice Mining Co.* 58 Fed. p. 120.)

While it has been remarked that the order in which the various steps required to complete a valid location is not necessarily invariable, it may be said in general that the claim is not safely secured against rival locators until a valid discovery of mineral has been made. Court decisions on the point have been at variance. In this state the first locator may get an injunction forbidding the second from coming upon the claim, pending decision of the matter. This would apparently give the first locator an advantage in the "race of diligence" to reach the mineral first. Prior possession is an important factor.

Where there is a contested area claimed by two or more locators, the senior locator might make a valid discovery of mineral in the contested area, but the junior locator or locators could not ordinarily

[2]W. E. Colby, Attorney-at-law and Lecturer on Mining Law, University of California.

do so, unless the senior locator so far forgot his own interests as to fail to take proper steps to prevent it. This point arose in a recent case decided by the local land office.

Neither the federal law nor the California statutes require that any particular form of opening or any certain amount of work be done to complete a valid discovery.

Marking the Claim, and the Shape of Claim.

In this state no particular manner of marking out the claim boundaries is required, but it is desirable to have substantial stakes at the four principal corners, the end centers, the discovery point and also at points where the side lines make angles. This of course refers to the location marks and not to the final survey for patent. While it is not absolutely necessary that such markers be maintained by the locator, it of course is advisable to keep such markers in place both for his own protection and as a matter of justice to other prospectors who may be seeking minerals in the same locality.

The ideal quartz mining claim, which will give the largest area allowed by the federal statute and the fullest exercise of the extralateral right, is 1500 feet long by 600 feet wide, and is a right-angled parallelogram with the side lines parallel to the lode and the end lines crossing the lode at right angles. The claim cannot extend more than 300 feet on each side of the center of the vein, measured at right angles to the side lines. The end lines must be parallel straight lines, but the side lines need not be either parallel or straight, and if the vein is sinuous, the side lines should follow it. Care should be exercised to see that the claim is so taken that the vein does not depart from the claim through a side line, as this would result in greatly cutting down the length of the claim and would curtail the exercise of the extralateral right, possibly with very serious loss to the locator. The law will give the locator only so much of the vein along the strike as he has of the apex within the boundaries of his claim. The end lines do not have to be of equal length and do not have to cross the vein at any particular angle. The possession of the apex within the boundaries of the claim is essential to the enjoyment of the extralateral right downward on the dip of the vein.

Form of Location Notice. Posting the Notice.

Neither the Federal nor the California statutes require any particular *form* that need be followed in writing the location notice, and it is not necessary to use any particular printed blank, although the blank is convenient and often safer as its use insures that attention will be called to the information required, preventing the omission of some important detail. Suggested forms that may be used as models in writing out either lode or placer location notices are shown herewith.

The courts as a rule have been liberal in dealing with the question of form of location notices, and as a rule inquire rather into the good faith of the locator than into the form of his notice. The notice must contain the details given under the five headings of paragraph 3 under requirements. The signatures of witnesses on the location notice naturally strengthen it in case of dispute, although not specifically required in California, and if it happened that two or more rival

locations were attempted upon the same claim on the same day, it would prove of value to show the hour of the posting. If the position of the claim with regard to section, township and range is known this should be shown. The old mining districts with their district recorders have become extinct, with possibly one exception, in this state.

The location notice must be posted at a conspicuous place on the claim, as it is intended to be a notice to all the world that the ground claimed has been removed from the public domain for mining purposes. It will be noted that the state law regarding placer locations says the location notice may be posted upon a tree, rock in place, stone, post or monument, and does not specifically mention that it is to be put at the point of discovery. As a matter of prudence, but not specifically required by law, the location notice should be maintained upon the claim. The test of the sufficiency of a location notice would be to take the notice as posted and recorded, and in the absence of stakes or lines, trace out the boundaries of the claim from the recorded description.

Assessment Work. Proof of Labor. Delinquent Colocator.

The annual assessment year now begins at noon, July first. The locator of a claim has one full year, beginning at noon of July first, next following the date of his location, during which to perform the first year's assessment work. One hundred dollars worth of labor must be done or improvements made upon each claim per annum. The test of the validity of assessment work done is: Does it facilitate the extraction of valuable mineral from the claim?

Three classes of work may be valid as assessment work or for credit toward the $500 requirement for patent. (1) Work within the boundaries of the claim for the purpose of actually developing the mineral deposits in the claim. This may consist of excavation, drilling, erection of works *for mining* or placing of machinery for use *in mining*, the development of orebodies, or the actual extraction of mineral. A quartz mill does not satisfy the assessment requirement on a lode claim, but a dredger does on a placer claim. (2) Work on a group of claims for the joint benefit of all, by virtue of the community of interest between colocators or an agreement between locators of adjoining claims. (3) Work outside of a claim or group of claims, when such work tends to facilitate the extraction of valuable mineral from the claim or claims. This includes tunnels for the development of deposits above the line of tunnel; roads and trails, and the making of flumes and ditches to conduct water to placer mining claims.

As regards requirements of assessment work, an association placer, taken up as a unit by colocators, may be considered as a single claim, though containing more than 20 acres. All the assessment work for a group of adjoining claims may be done upon one claim if conclusively shown to benefit the entire group, and if $100 is expended for each claim. The term "group of claims" as here used, is applied to a number of claims taken up by colocators and regarding which it was understood at the time of location that they were being so taken.

The proof of labor is an affidavit made by the owner of the claim or by some one in his behalf, acquainted with the facts, setting forth that during the year in question, certain amounts (not less than $100

for each claim) have been expended for labor upon or for improvements upon the claim named. This affidavit must be filed for record in the office of the county recorder of the county in which the claim or claims are situated, within 30 days after July first each year (except as before mentioned for the fraction of a year between the date of location and the next July first.)

The California statute (see paragraph 1426*s* herewith) provides that the failure or neglect of any locator of a mining claim to perform assessment work as specified in the United States statutes shall disqualify such locator from relocating such claim or any part thereof within three years of the date of his original location, and any such attempted relocation is declared void. To prevent location of such a claim by others, such a delinquent locator would have to go upon the claim and prosecute his work to completion.

The United States statutes (section 2324 herewith) provide the general manner in which one locator of a claim who keeps up the assessment work on the claim may obtain relief from his fellow locators who fail to pay their shares of such expense. The California statute (paragraph 1426*o* herewith) sets forth in detail the procedure to be followed in serving or publishing the notice to the delinquent party, and the steps the delinquent may take to protect his interests within the 90-day period allowed him. Failure of such delinquent coowner to meet his share of the cost of assessment work within 90 days after personal service of notice, or within 90 days after the beginning of weekly publication of such notice of delinquency in the newspaper published nearest the claim, results in the delinquent's interest in the claim becoming the property of the owner or coowners who have paid for the assessment work.

Extent of the Right to Locate Claims and Those Eligible to Make Locations.

Neither the United States nor California mining laws limit the number of lode claims that may be located by one person. An individual may locate as many claims for lode mining as he is able to find separate valid discoveries of mineral for, the law requiring that such a discovery be made for each claim within the boundaries of the claim.

A single locator may not locate more than 20 acres of placer mining ground in one 'claim,' but an association of locators may take up an association placer, containing not more than 20 acres for each locator, and not more than 160 acres in a single such association 'claim' by a minimum of eight persons.

Women and minor children have equal rights with others in locating mining claims.

What May Be Located as Mineral.

It seems strange that dispute should arise as to whether or not a substance is mineral. Yet it is of recent record that the question of the mineral character has been raised in the case of such an important mineral as petroleum, by parties who were interested in having oil lands declared nonmineral. Besides the metals, which are minerals beyond dispute, the following substances have been held to be mineral, according to the decision of the United States Land Office and the

courts: Alum, amber, asphaltum (see petroleum), borax, brick clay, building stone, carbonates (of soda etc.) cement (gypsum), china clay, high-grade pottery clay, etc.; coal (special laws govern), diamonds and other precious stones, gravel, guano, gypsum, kaolin, limestone, marble, mica, natural gas (see petroleum), nitrates, onyx, petroleum (special withdrawals), potash (special legislation), phosphates (special legislation), salt (special law), sand, sandstone, slate, soda (nitrate and carbonate), stone of special commercial value, sulphur and umber.

There is sometimes question as to whether or not a certain deposit should be located as placer or lode. In such a case and in the absence of sufficient technical knowledge or lack of advice, there is nothing to prevent the location both as lode and placer, pending final determination of the character of deposit. In locating placer mining ground in which lodes occur, special attention should be paid to the provisions of law governing such cases. The Revised Statutes of the United States, title 32, chapter 6, section 2333, cover this point. It is provided that lodes known to exist within a placer claim for which patent is being sought must be described and separately purchased, and if the placer claimant, knowing of the presence of such lodes, fails to mention them in his application for placer patent, his failure to so do shall be construed as a declaration that he has no right of possession of such lodes. Quartz claims with a width of fifty feet may be taken up on *known* quartz veins within the boundaries of placer claims, but the complications that are apt to arise when a second party attempts to make such a location against the wishes of a hostile placer claimant, on whose claim he must trespass to make the lode location, are such as to call for the exercise of care. When a lode exists in a placer claim, but has not been discovered previous to the issuance of placer patent, the placer patent includes the lode or lodes that may be later discovered.

LANDS OPEN TO LOCATION FOR MINING.

Title 32, chapter 6, section 2319, Revised Statutes of the United States, provides that all valuable mineral deposits in lands belonging to the United States, both surveyed and unsurveyed, are declared to be free and open to exploration and purchase, and the lands in which they are found to occupation and purchase, by citizens of the United States, and those who have declared their intention to become such. During recent years there have been many withdrawals of mineral lands and much special legislation regarding deposits of certain minerals. In fact there has been such a tendency ever since 1866, when a bill was presented in congress providing for the leasing of western mining lands on royalty. This was defeated by the western mining interests who substituted the mining law of 1866, which was later superseded by the enactment of 1872.

Under present conditions, lands known to contain coal, petroleum, oil shale, potash, phosphate, sodium salts (except common salt, on which one claim only can be located) can not be located and patented under the regular lode or placer laws but are obtainable under lease, subject to the control of the Secretary of the Interior. Land in certain national parks and national monuments is also not subject to entry. There have also been certain withdrawals of public lands for powersite

and kindred use, with a Federal Power Commission exercising certain powers of disposal, and with entries for other purposes not allowed. The status of these powersite withdrawals, as affecting the miner's rights, is somewhat uncertain, and whether or not he could successfully prosecute a claim to land taken up under the mining law within such power reserves is debatable, as the United States Land Office regulations seem to imply some leeway, depending on circumstances in each case. Certain Indian reservations in the western states, including a few in California, which have heretofore not been open to exploration for mining, have been thrown open for prospecting in the last few years, and rules and regulations have been set up under which such reservation lands may be mined. These rules are rather onerous, and would deter the ordinary small prospector. Among the requirements for working such lands is one calling for a bond to be executed in favor of the government for $500 or more on each lease, depending on acreage, and the payment of annual rental of 25 cents and upward per acre, as well as payment of royalty on any ores or minerals sold. This reservation land can be mined only for metalliferous minerals. Claims are to be taken up according to the United States mining laws, and annual assessment work has to be done in addition to having a survey made and fulfilling all the other terms mentioned. Information regarding mining such Indian reservation lands can be had from the several superintendents of the reservations. The leases are issued by the Secretary of the Interior, through the local superintendents.

Vacant government land within the numerous national forests of this state is open to location and patent for mining purposes to the same extent as other vacant unreserved government land. The total area of the national forests in California is about 19,000,000 acres and the lands included lie for the most part in the mountainous eastern part of the state, away from the settled portions and in general above an elevation of 2500 feet. Maps of the different forests may be obtained from the various local offices of the United States Forest Service or from their office in the Ferry Building, San Francisco. There is, of course, a great deal of patented land within the boundaries of these forests, which was patented before the forest reserve was set aside, and the local forest service employes should be consulted about such lands if in doubt.

The speed with which the unreserved government lands (outside the national forests) in this state are being patented or otherwise withdrawn is shown by a comparison. On July 1, 1919, the General Land Office reported that the total acreage of such lands in California was 20,239,977 acres. On July 1, 1923, the total acreage was 18,091,187 acres, showing that over ten per cent of such lands had been patented or withdrawn in the four years concerned. The figures are from circulars of the General Land Office. The United States government maintains local land offices at the following points in this state, where information can be had regarding vacant government lands or steps taken to make entry for patent: El Centro, Eureka, Independence, Los Angeles, Sacramento, San Francisco, Susanville, and Visalia.

Mention should also be made here of the land included in stock-raising homesteads, patented under the act of December 29, 1916. Under the provisions of this act the Secretary of the Interior was

authorized to designate unreserved public lands in the public-land states, of which California is one, as stock-raising lands. This does not refer to lands within the national forests. Under the terms of section 9 of this act, it is provided that all patents issued thereunder "shall contain a reservation to the United States of all coal and other minerals in the lands so entered and patented, together with the right to prospect for, mine and remove the same"; the same section also provides that any person qualified to locate and enter the coal or other mineral deposits, or having the right to mine and remove the same under the laws of the United States, shall have the right at all times to enter upon the lands entered or patented under the act for the purpose of prospecting for the coal or other mineral therein. But he shall not injure or damage or destroy the permanent improvements of the entryman or patentee and shall be liable to and shall compensate the entryman or patentee for all damages to the crops on the land by reason of such prospecting. The prospector is required to do one of three things: (1) he must obtain the written consent or waiver of the homestead entryman or patentee; (2) he must pay damages to crops or other tangible improvements if and when an agreement is reached as to the amount of such damages; or, (3) in lieu of either of the foregoing provisions, he must execute a good and sufficient bond for not less than $1,000 in favor of the United States for the use and benfit of the homesteader, to secure the payment of such damages. Subject to these provisions, he may occupy as much of the surface of such a homestead as may be reasonably necessary for the mining and removal of the mineral deposits within his mining claims. Where the mining location was made prior to the entry for homestead, the mining claimant must exercise diligence in filing a protest in the local land office of the district in which his claim is, setting forth the facts regarding his mining claim and the mineral character of the land, otherwise he is apt to awake too late to the fact that his claim has been given to the homesteader.

This act has been the cause of considerable complaint, and appears in some particulars to contradict itself. While it expressly reserves the mineral resources in such lands and affirms the right of qualified persons to enter the land for the purpose of prospecting for and mining mineral deposits, it also sets up restrictions which tend to discourage the prospector and which are discriminatory in favor of the homesteader.

Before passing from the subject of vacant public lands and the rights of the prospector thereon, it can not be too forcibly emphasized that, having once located a mining claim with the intention of holding and working the same, the only safe course for the locator to follow is to complete in the shortest possible time the $500 worth of labor or improvements required for patent, to have the necessary survey made, and to press his application for patent with all diligence. Under the present laws, the miner has no means of making his claim known officially to the United States Land Office until he has completed the above work and has sought a patent, or until adverse claimants make it necessary for him to file a protest. If he spends only part of the year in the district where his claims are, it may happen that the published notice of application for patent by adverse

claimants may escape his attention, and patent may be given to the adverse claimant for the land within his mining location, in spite of the fact that he may have fulfilled all the requirements of law to hold his claim and may be actually developing the claim at the time. This state of affairs is possible because of the failure of the United States Land Office to examine the character of lands for which patent is sought unless a protest is made.

STATE LANDS OPEN TO MINING.

Besides the vacant government lands, there are within the State of California about 750,000 acres of land belonging to the state. This consists chiefly of sections numbered 16 and 36, thus far unsold, in each township, except where exchanges have been made or are in course of being made, with the federal government for administrative reasons. Much of this land, like the vacant government lands, is either mountainous or desert land having little value as a rule for agriculture but with mineral possibilities in many cases. The counties containing large acreages of this state land are as follows: San Bernardino, about 250,000 acres; Inyo, about 150.000 acres; Riverside, 50,000 acres; Lassen, about 60,000 acres; Modoc, about 30,000 acres; Imperial, 30,000 acres, with lesser amounts in other counties, there being some of this land in about forty counties. This land is sold subject to a reservation of one-sixteenth of all minerals ever found therein to the state. Unsold state lands may be prospected, and may be leased for mining purposes, under regulations prescribed by the State Surveyor General, Capitol Building, Sacramento, and requests for information regarding the location of such lands and regulations governing the sale or lease of same should be addressed to him.

The records and reports of the State Mining Bureau, as well as the various government reports on file in the offices of the Bureau, may be referred to for information about the geology and mineral resources of the entire state, and these records will often be found useful in giving the prospector a general idea of the character and mineral possibilities of the district where he intends to search for minerals.

OTHER LAWS AFFECTING THE MINING LOCATOR.

Hydraulic Mining.

Placer mining by the hydraulic process on streams which drain into any tributary of a navigable river in this state must be carried on under regulations laid down by the California Debris Commission, made up of three officers of the Corps of Engineers, United States Army. For information regarding steps to be taken in order to obtain written permission for hydraulic mining on the watersheds of the navigable rivers, inquiries should be addressed to Major U. S. Grant III, secretary, California Debris Commission, 85 Second street, San Francisco. The above restrictions do not apply on the Trinity, Klamath, Salmon, Smith or other rivers of the northern part of the state which are not navigable, but do cover work on any tributary of the Sacramento or San Joaquin or Feather rivers, which means all that part of the state whose streams flow into the great central valley.

Safety Regulations.

The Industrial Accident Commission of California is charged with the framing and enforcement of safety orders and rules for the protection of mine workers, and inquiries on any phase of this subject should be addressed to the commission at the State Building, Civic Center, San Francisco.

Use of Water for Mining.

The miner often wishes to use water that flows through or near by his claims. While the riparian right will permit the use by such an owner of water flowing through the claim where it is used, it is necessary to file an appropriation when desiring to make use of water where the diversion point is outside of the claim. For the formalities to be observed in making an appropriation, the inquirer should address State Water Commission, Department of Public Works, Forum Building, Sacramento. Water must be put to beneficial use as soon as possible, to hold it.

Use of Timber on Unpatented Mining Claims.

The law permits a locator to use for mining or other necessities *on the claim or claims concerned*, any timber growing thereon, but such timber can not be cut down and taken off the claim for other uses.

Use of Mining Claims for Other Purposes.

A mining claim can not be located as such and then used for other purposes such as a site for a store or summer resort, and such an attempted use would invalidate the location.

UNITED STATES MINING STATUTES.

Title XXXII, Chapter 6, Revised Statutes.

SEC. 2319. All valuable mineral deposits in lands belonging to the United States, both surveyed and unsurveyed, are hereby declared to be free and open to exploration and purchase, and the lands in which they are found to occupation and purchase, by citizens of the United States and those who have declared their intention to become such, under regulations prescribed by law, and according to the local customs or rules of miners in the several mining districts, so far as the same are applicable and not inconsistent with the laws of the United States.

Lode Claims.

SEC. 2320. Mining claims upon veins or lodes of quartz or other rock in place bearing gold, silver, cinnabar, lead, tin, copper, or other valuable deposits, heretofore located, shall be governed as to length along the vein or lode by the customs, regulations, and laws in force at the date of their location. A mining claim located after the tenth day of May, eighteen hundred and seventy-two, whether located by one or more persons, may equal, but shall not exceed, one thousand five hundred feet in length along the vein or lode; but no location of a mining claim shall be made until the discovery of the vein or lode within the limits of the claim located. No claim shall extend more than three hundred feet on each side of the middle of the vein at the surface, nor shall any claim be limited by any mining regulation to less than twenty-five feet on each side of the middle of the vein at the surface, except where adverse rights existing on the tenth day of May, eighteen hundred and seventy-two, render such limitation necessary. The end lines of each claim shall be parallel to each other.

Citizenship.

SEC. 2321. Proof of citizenship, under this chapter, may consist, in the case of an individual, of his own affidavit thereof; in the case of an association of persons unincorporated, of the affidavit of their authorized agent, made on his own knowledge, or upon information and belief; and in the case of a corporation organized under the laws of the United States, or of any state or territory thereof, by the filing of a certified copy of their charter or certificate of incorporation.

This is supplemented by an act of April 26, 1882, which provides:

"That applicants for mineral patents, if residing beyond the limits of the district wherein the claim is situated, may make any oath or affidavit required for proof of citizenship before the clerk of any court of record, or before any notary public of any state or territory." (22 Stats. at Large, p. 49, Chap. 106.)

Extralateral Rights.

SEC. 2322. The locators of all mining locations heretofore made or which shall hereafter be made, on any mineral vein, lode, or ledge, situated on the public domain, their heirs and assigns, where no adverse claims exist on the tenth day of May, eighteen hundred and seventy-two, so long as they comply with the laws of the United States, and with state, territorial and local regulations not in conflict with the laws of the United States governing their possessory title, shall have the exclusive right of possession and enjoyment of all the surface included within the lines of their locations, and of all veins, lodes and ledges throughout their entire depth, the top or apex of which lies inside of such surface lines extended downward vertically, although such veins, lodes, or ledges may so far depart from a perpendicular in their course downward as to extend outside the vertical side lines of such surface locations. But their right of possession to such outside parts of such veins or ledges shall be confined to such portions thereof as lie between vertical planes drawn downward as above described through the end lines of their locations, so continued in their own direction that such planes will intersect such exterior parts of such veins or ledges. And nothing in this section shall authorize the locator or possessor of a vein, or lode which extends in its downward course beyond the vertical lines of his claim, to enter upon the surface of a claim owned or possessed by another.

Tunnel Claims.

SEC. 2323. Where a tunnel is run for the development of a vein or lode, or for the discovery of mines, the owners of such tunnel shall have the right of possession of all veins or lodes within three thousand feet from the face of such tunnel on the line thereof, not previously known to exist, discovered in such tunnel, to the same extent as if discovered from the surface and locations on the line of such tunnel of veins or lodes not appearing on the surface, made by other parties after the commencement of the tunnel, and while the same is being prosecuted with reasonable diligence, shall be invalid, but failure to prosecute the work on the tunnel for six months shall be considered as an abandonment of the right to all undiscovered veins on the line of such tunnel.

Recording and Annual Assessments.

SEC. 2324. The miners of each mining district may make regulations not in conflict with the laws of the United States, or with the laws of the state or territory in which the district is situated, governing the location, manner of recording, amount of work necessary to hold possession of a mining claim, subject to the following requirements: The location must be distinctly marked on the ground so that its boundaries can be readily traced. All records of mining claims hereafter made shall contain the name or names of the locators, the date of the location, and such a description of the claim or claims located by reference to some natural object or permanent monument as will identify the claim. On each claim located after the tenth day of May, eighteen hundred and seventy-two, and until a patent has been issued therefor, not less than one hundred dollars' worth of labor shall be performed or improvements made during each year.

Be it enacted by the senate and house of representatives of the United States of America in congress assembled, that section two thousand, three hundred and twenty-four of the Revised Statutes be, and the same is hereby, amended so that where a person or company has or may run a tunnel for the purpose of developing a lode or

lodes, owned by said person or company, the money so expended in said tunnel shall be taken and considered as expended on said lode or lodes, whether located prior to or since the passage of said act; and such person or company shall not be required to perform work on the surface of said lode or lodes in order to hold the same as required by said act. (18 Stats. at Large, page 315, Chap. 41.)

Patents.

Section 2325 of the federal statutes provides that after $500 has been expended on a mining claim in work or improvements, a patent can be applied for, upon the claim being surveyed by a United States mineral surveyor, and by the payment of $5 per acre for the land to the United States government.

PLACERS.

SEC. 2329. Claims usually called "placers" including all forms of deposit, excepting veins of quartz, or other rock in place, shall be subject to entry and patent, under like circumstances and conditions, and upon similar proceedings, as are provided for vein or lode claims; but where the lands have been previously surveyed by the United States, the entry in its exterior limits shall conform to the legal subdivisions of the public lands.

Areas of Placer Claims.

SEC. 2330. Legal subdivisions of forty acres may be subdivided into ten-acre tracts, and two or more persons, or associations of persons, having contiguous claims of any size, although such claims may be less than ten acres each, may make joint entry thereof; but no location of a placer claim, made after the ninth day of July, eighteen hundred and seventy, shall exceed one hundred and sixty acres for any one person or association of persons, which location shall conform to the United States surveys; and nothing in this section contained shall defeat or impair any bona fide preemption or homestead claim upon agricultural lands, or authorize the sale of the improvements of any bona fide settler to any purchaser.

SEC. 2331. Where placer claims are upon surveyed lands, and conform to legal subdivisions, no further survey or plat shall be required, and all placer mining claims located after the tenth day of May, eighteen hundred and seventy-two, shall conform as near as practicable with the United States system of public lands surveys, and the rectangular subdivisions of such surveys, and no such location shall include more than twenty acres for each individual claimant; but where placer claims can not be conformed to legal subdivisions, survey and plat shall be made as on unsurveyed lands; and where by the segregation of mineral land in any legal subdivision a quantity of agricultural land less than forty acres remains, such fractional portion of agricultural land may be entered by any party qualified by law, for homestead or preemption purposes.

Placer Boundaries.

SEC. 2333. Where the same person, association, or corporation is in possession of a placer claim, and also a vein or lode included within the boundaries thereof, application shall be made for a patent for the placer claim, with the statement that it includes such vein or lode, and in such case a patent shall issue for the placer claim, subject to the provisions of this chapter, including such vein or lode upon the payment of five dollars per acre for such vein or lode claim, and twenty-five feet of surface on each side thereof. The remainder of the placer claim, or any placer claim not embracing any vein or lode claim, shall be paid for at the rate of two dollars and fifty cents per acre, together with all costs of proceedings; and where a vein or lode, such as is described in section twenty-three hundred and twenty, is known to exist within the boundaries of a placer claim, an application for a patent for such placer claim which does not include an application for the vein or lode claim shall be construed as a conclusive declaration that the claimant of the placer claim has no right of possession of the vein or lode claim; but where the existence of a vein or lode in a placer claim is not know, a patent for the placer claim shall convey all valuable mineral and other deposits within the boundaries thereof.

CALIFORNIA STATUTES REGARDING LOCATION OF MINING CLAIMS, MILL SITES AND ASSESSMENT WORK.

An act to amend the Civil Code of California by adding a new title thereto, to be numbered title X, in part IV of division second, consisting of sections 1426,

1426*a*, 1426*b*, 1426*c*, 1426*d*, 1426*e*, 1426*f*, 1426*g*, 1426*h*, 1426*i*, 1426*j*, 1426*k*, 1426*l*, 1426*m*, 1426*n*, 1426*o*, 1426*p*, 1426*q*, 1426*r*, and 1426*s*, providing for the manner of locating lode and placer mining claims, tunnel rights, mill sites, and prescribing the character and amount of assessment work on mining claims, and providing for proofs of such work, and for the recordation of location notices, and proof of labor, and for the enforcement of contributions from delinquent co-owners of mining claims, and prescribing the duties of county recorders respecting the recording of location notices of, and proofs of labor on, mining claims, tunnel rights, and mill sites, and the fees to be charged therefor, and repealing acts in conflict herewith.

[Approved March 13, 1909.]

The people of the State of California, represented in senate and assembly, do enact as follows:

SECTION 1. The Civil Code of the State of California is hereby amended by adding a new title thereto, to be numbered title X, in part IV of second division, consisting of sections 1426, 1426*a*, 1426*b*, 1426*c*, 1426*d*, 1426*e*, 1426*f*, 1426*g*, 1426*h*, 1426*i*, 1426*j*, 1426*k*, 1426*l*, 1426*m*, 1426*n*, 1426*o*, 1426*p*, 1426*q*, 1426*r*, and 1426*s*, to read as follows:

§ 1426. Any person, a citizen of the United States, or who has declared his intention to become such, who discovers a vein or lode of quartz, or other rock in place bearing gold, silver, cinnabar, lead, tin, copper, or other valuable deposit, may locate a claim upon such vein or lode, by defining the boundaries of the claim, in the manner hereinafter described, and by posting a notice of such location, at the point of discovery, which notice must contain:

First—The name of the lode or claim.

Second—The name of the locator or locators.

Third—The number of linear feet claimed in length along the course of the vein, each way from the point of discovery, with the width on each side of the center of the claim, and the general course of the vein or lode, as near as may be.

Fourth—The date of location.

Fifth—Such a description of the claim by reference to some natural object, or permanent monument, as will identify the claim located.

§ 1426*a*. The locator must define the boundaries of his claim so that they may be readily traced, and in no case shall the claim extend more than fifteen hundred feet along the course of the vein or lode, nor more than three hundred feet on either side thereof, measured from the center line of the vein at the surface.

§ 1426*b*. Within thirty days after the posting of his notice of location upon a lode mining claim, the locator shall record a true copy thereof in the office of the county recorder of the county in which such claim is situated, for which service the county recorder shall receive a fee of one dollar.

§ 1426*c*. The location of a placer claim shall be made in the following manner: By posting thereon, upon a tree, rock in place, stone, post or monument, a notice of location, containing the name of the claim, name of locator or locators, date of location, number of feet or acreage claimed, such a description of the claim by reference to some natural object or permanent monument as will identify the claim located, and by marking the boundaries so that they may be readily traced; *provided*, that where the United States survey has been extended over the land embraced in the location, the claim may be taken by legal subdivisions and no other reference than those of said survey shall be required and the boundaries of a claim so located and described need not be staked or monumented. The description by legal subdivisions shall be deemed the equivalent of marking.

§ 1426*d*. Within thirty days after the posting of the notice of location of a placer claim, the locator shall record a true copy thereof in the office of the county recorder of the county in which such claim is situated, for which service the recorder shall receive a fee of one dollar.

§ 1426*e*. The locator of a tunnel right or location, shall locate his tunnel right or location by posting a notice of location at the face or point of commencement of the tunnel, which must contain:

First—The name of the locator or locators.

Second—The date of the location.

Third—The proposed course or direction of the tunnel.

Fourth—A description of the tunnel, with reference to some natural object or permanent monument as shall identify the claim or tunnel right.

§ 1426*f*. The boundary lines of the tunnel shall be established by stakes or

monuments placed along the lines at an interval of not more than six hundred feet from the face or point of commencement of the tunnel to the terminus of three thousand feet therefrom.

§ 1426*g*. Within thirty days after the posting the notice of location of the tunnel right or location, the locator shall record a true copy thereof, in the office of the county recorder of the county in which such claim is situated, for which service the recorder shall receive a fee of one dollar.

§ 1426*h*. If at any time the locator of any mining claim heretofore or hereafter located, or his assigns, shall apprehend that his original location notice was defective, erroneous, or that the requirements of the law had not been complied with before filing; or in case the original notice was made prior to the passage of this act, and he shall be desirous of securing the benefit of this act, such locator, or his assigns, may file an additional notice, subject to the provisions of this act; *provided*, that such amended location does not interfere with the existing rights of others at the time of posting and filing such amended location notice, and no such amended location notice or the record thereof, shall preclude the claimant, or claimants from proving any such title as he or they may have held under previous locations.

§ 1426*i*. Where a locator, or his assigns, has the boundaries and corners of his claim established by a United States deputy mineral survey, or a licensed surveyor of this state, and his claim connected with the corner of the public or minor surveys of an established initial point, and incorporates into the record of the claim, the field notes of such survey, and attaches to and files with such location notice a certificate of the surveyor, setting forth: *first*, that said survey was actually made by him, giving the date thereof; *second*, the name of the claim surveyed and the location thereof; *third*, that the description incorporated in the declaratory statement is sufficient to identify; such survey and certificate becomes a part of the record, and such record is prima facie evidence of the facts therein contained.

§ 1426*j*. The proprietor of a vein or lode claim or mine, or the owner of a quartz mill or reduction works, or any person qualified by the laws of the United States, may locate not more than five acres of non-mineral land as a mill site. Such location shall be made in the same manner as hereinbefore required for locating placer claims.

§ 1426*k*. The locator of a mill site claim or location shall, within thirty days from the date of his location, record a true copy of his location notice with the county recorder of the county in which such location is situated, for which service the recorder shall receive a fee of one dollar.

§ 1426*l*. The amount of work done or improvements made during each year to hold possession of a mining claim shall be that prescribed by the laws of the United States, to wit: One hundred dollars annually.

§ 1426*m*. Whenever [a] mine owner, company, or corporation shall have performed the labor and made the improvements required by law upon any mining claim, the person in whose behalf such labor was performed or improvements made, or some one in his behalf, shall within thirty days after the time limited for performing such labor or making such improvements make and have recorded by the county recorder, in books kept for that purpose, in the county in which such mining claim is situated, an affidavit setting forth the value of labor or improvements made, the name of the claim, and the name of the owner or claimant of said claim at whose expense the same was made or performed. Such affidavit, or a copy thereof, duly certified by the county recorder, shall be prima facie evidence of the performance of such labor or the making of such improvements, or both.

§ 1426*n*. For recording the affidavit herein required, the county recorder shall receive a fee of fifty cents.

§ 1426*o*. Whenever a co-owner or co-owners of a mining claim shall give to a delinquent co-owner or co-owners the notice in writing or notice by publication provided for in section 2324, Revised Statutes of the United States, an affidavit of the person giving such notice, stating the time, place, manner of service, and by whom and upon whom such service was made, shall be attached to a true copy of such notice, and such notice and affidavit must be recorded in the office of the county recorder, in books kept for that purpose, in the county in which the claim is situated, within ninety days, after the giving of such notice; for the recording of which said recorder shall receive the same fees as are now allowed by law for recording deeds; or if such notice is given by publication in a newspaper, there shall be attached to a printed copy of such notice an affidavit of the printer or his foreman, or principal clerk of such paper, stating the date of the first, last and each insertion of such notice therein, and where the newspaper was published during that time, and the name of such newspaper. Such affidavit and notice shall be recorded as aforesaid, within one hundred and eighty days after the first publication thereof. The original

of such notice and affidavit, or a duly certified copy of the record thereof, shall be prima facie evidence that the delinquent mentioned in section 2324 has failed or refused to contribute his proportion of the expenditure required by that section, and of the service of publication of said notice; *provided*, the writing or affidavit hereinafter provided for is not of record. If such delinquent shall, within the ninety days required by section 2324, aforesaid, contributed to his co-owner or co-owners, his proportion of such expenditures, and also all costs of service of the notice required by this section, whether incurred for publication charges, or otherwise, such co-owner or co-owners shall sign and deliver to the delinquent or delinquents a writing stating that the delinquent or delinquents by name has within the time required by section 2324 aforesaid, contributed his share for the year _____, upon the _____ mine, and further stating therein the district, county and state wherein the same is situated, and the book and page where the location notice is recorded, if said mine was located under the provisions of this act; such writing shall be recorded in the office of the county recorder of said county, for which he shall receive the same fees as are now allowed by law for recording deeds. If such co-owner or co-owners shall fail to sign and deliver such writing to the delinquent or delinquents within twenty days after such contribution, the co-owner or co-owners so failing as aforesaid shall be liable to the penalty of one hundred dollars, to be recovered by any person for the use of the delinquent or delinquents in any court of competent jurisdiction. If such co-owner or co-owners fail to deliver such writing within said twenty days, the delinquent, with two disinterested persons having personal knowledge of such contribution, may make affidavit setting forth in what manner, the amount of, to whom, and upon what mine, such contribution was made. Such affidavit, or a record thereof, in the office of the county recorder of the county in which such mine is situated, shall be prima facie evidence of such contribution.

§ 1426*p*. The record of any location of a mining claim, mill site or tunnel right, in the office of the county recorder, as herein provided shall be received in evidence, and have the same force and effect in the courts of the state as the original notice.

§ 1426*q*. Copies of the records of all instruments required to be recorded by the provisions of this act, duly certified by the recorder, in whose custody such records are, may be read in evidence, under the same circumstances and rules as are now, or may be hereafter provided by law, for using copies of instruments relating to real estate, duly executed or acknowledged or proved and recorded.

§ 1426*r*. The provisions of this act shall not in any manner be construed as affecting or abolishing any mining district or the rules and regulations thereof within the State of California.

§ 1426*s*. The failure or neglect of any locator of a mining claim to perform development work of the character, in the manner and within the time required by the laws of the United States, shall disqualify such locators from relocating the ground embraced in the original location or mining claim or any part thereof under the mining laws, within three years after the date of his original location and any attempted relocation thereof by any of the original locators shall render such location void.

SEC. 2. All acts and parts of acts in conflict with this act, are hereby repealed.

SEC. 3. This act shall take effect and be in force on and after July 1, 1909.

FORMS FOR LOCATION NOTICES.

The following forms for mineral location notices have been found to fill the requirements of the statutes, in California:

NOTICE OF QUARTZ LODE LOCATION.

Notice is hereby given, That I, _____, have discovered a vein of rock in place, carrying valuable deposits, upon which I have erected a discovery monument and posted this notice, as hereinafter set forth; that in accordance with the provision of chapter VI, title XXXII of the Revised Statutes of the United States and the laws of the State of California, I hereby claim fifteen hundred linear feet of said vein, measured thereon as hereinafter set forth. Said discovery was made on the_____ day of_____, 19____. Immediately upon making the same, and on the_____day of_____, 19____, I erected at the point of discovery, a substantial monument, consisting of a mound of rocks and_____and posted thereon this notice.

The *general course of said vein is_____and_____. I claim in length thereon_____feet_____and_____feet_____from

*Make this description in accordance with the facts, as "The general course of said vein is north and south. I claim in length thereon (for example) 500 feet north

said discovery monument. I also claim three hundred feet on each side of the center of the vein. This vein or claim shall be known as and called the_____. It is situated in_____Mining District, and in †Sec._____, Tp._____, R._____, B. and M., in_____County, California, and the discovery monument_____being placed about §_____from_____

That the following is a description of said location as marked upon the ground: ‡ commencing at the_____of said claim, a_____from which initial point the discovery monument is distant about_____feet in a_____direction; _____thence ‖_____

Dated, this_____day of_____, 19____.

_____

Locator.

NOTICE OF LOCATION OF PLACER CLAIM.

Notice is hereby given, That_____citizen____ of the United States, h____ this_____day of_____, 19____, discovered a valuable placer deposit within the limits of this claim; that by virtue of said discovery, _____ha____ located, and hereby locate and claim the following described land, situate in_____Mining District, _____County, California, to wit: *_____of section_____township_____, range_____, B. and M., containing_____acres.† Said claim is hereby named_____Placer Claim. Said claim is marked upon the ground as follows: ‡_____

This notice is posted on a mound of rocks at the point of discovery, situated §_____

Dated and posted on the ground, this_____day of_____, 19____.

_____

Locator.

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and 1000 feet south from said discovery monument."

†If the claim is upon surveyed land, give the section, township and range, if possible. This is not required by law, but makes a much better description.

§Here refer to some natural object or permanent monument so as to identify the locality of the claim, in compliance with section 2324, Revised Statutes U. S. A road, house, tree, known mountain or peak, government corner, mill, or known mining claim, are such objects or monuments. As, "About one mile directly east from John Doe's quartz mill and 400 rods west from the Last Hope mine," etc.

‡Here state (for example): "Commencing at the N.E. corner of said claim, a mound of rocks 4 ft. high," or at any other corner or point in the boundary; give the distance and direction from this initial monument to the discovery monument, and then locate the discovery with reference to some natural object or permanent monument.

‖Here follows a description of the claim from the initial monument. For instance: "Thence 600 ft. northwesterly to the N.W. corner of said claim, at which point is a mound of rocks 2½ ft. high, marked so-and-so (if marked); thence 1500 ft. southwesterly to the S.W. corner of said claim, being a mound of rocks," etc.; so going around the claim to the point of beginning.

*The statute provides that the locator must give "a description of the claim by reference to legal subdivisions of sections, if the location is made in conformity with the public surveys; otherwise a description with reference to some natural object or permanent monument as will identify the claim."

†When not described by legal subdivisions, the description should conform to that contained in the final certificate of location of a lode claim.

‡The statute provides that, whether described by legal subdivisions or not, the location shall be marked by the locator on the ground, and as the affidavit to be filed later is not required to contain a description of the claim, we think this notice should state how the location is marked; as, for instance, "At the N.E. corner of said tract a mound of rocks 3 ft. high, marked so-and-so (if marked), and at the N.W. corner a stake in a mound of rocks, marked," etc., and so on for each monument enclosing the claim.

§Here state where the discovery is located, as, for instance, "20 feet S.W. of the N.E. corner monument."

NOTE: A duplicate of either of these notices must be filed for record with the county recorder within 30 days from the discovery; and the locator is allowed 30 days to mark his location on the ground.

The foregoing form of placer notice may be used for location of all deposits which are classed under placer laws and not excepted by The Leasing Act of February 25, 1920 (see Oil and Gas Rights, pp. 212-215, 218-285, *ante*).

LICENSE REQUIRED TO HANDLE MINING PROPERTY.

By Edwin T. Keiser.[1]

[The question as to whether or not a person handling mining property is required by the law to take out a real estate broker license has been raised many times. In order that those interested in the development of mines and mining in this state may have definite information on this subject, at the request of the State Mineralogist, the following notes have been prepared by Mr. Edwin T. Keiser, Commissioner, State Real Estate Department.]

As to whether or not a person selling mining property is required by the law to secure a real estate broker license, I first call your attention to section 1, chapter 605, Statutes 1919, which reads as follows: "It shall be unlawful for any person, copartnership or corporation to engage in the business, or act in the capacity of a real estate broker, or a real estate salesman within this state without first obtaining a license therefor."

Section 2, of the same chapter, reads as follows: "A real estate broker within the meaning of this act is a person, copartnership or corporation who, for a compensation, sells, or offers for sale, buys, or offers to buy, or negotiates the purchase or sale or exchange of real estate, or who, for compensation, negotiates loans on real estate, leases, or offers to lease, rents, or places for rent, or collects rents from real estate, or improvements thereon, for others as a whole or partial vocation."

The last sentence of the same section states that "One act, for a compensation, or buying or selling real estate of or for another, or offering for another to buy or sell or exchange real estate, or negotiating a loan on or leasing or renting or placing for rent real estate, or collecting rent therefrom shall constitute the person, copartnership or corporation making such offer, sale or purchase, exchange or lease, or negotiating said loan, or so renting or placing for rent or collecting said rent a real estate broker or salesman within the meaning of this act."

It can be readily seen from the above that any one who, for a compensation, buys or sells real estate for another is required to hold a real estate broker license, and that one act alone for a compensation constitutes such person a real estate broker or salesman.

I further call your attention to section 17, of the same act, which reads: "Any person or corporation acting as real estate broker or real estate salesman within the meaning of this act without a license as herein provided shall, upon conviction thereof, if a person, be punished by a fine of not to exceed two thousand dollars, or by imprisonment in the county jail or state prison for a term not to exceed two years, or by both such fine and imprisonment, in the discretion of the court; or if a corporation, be punished by a fine of not to exceed five thousand dollars."

Under section 20 of the act, "No person, copartnership or corporation engaged in the business or acting in the capacity of a real estate broker or a real estate salesman within this state shall bring or maintain any action in the courts of this state for the collection of compensation for the performance of any of the acts mentioned in section two hereof without alleging and proving that such person, copartner-

[1]Commissioner, State Real Estate Department, Sacramento, Cal.

ship or corporation was a duly licensed real estate broker or real estate salesman at the time the alleged cause of action arose."

A broker, therefore, in order to collect for his services must be in the possession of a real estate broker license at the time the alleged cause of action arose. Many brokers have been defeated in their attempt to collect a commission because they were negligent and dilatory in the securing of a license from this department.

In regard to the application of the real estate act to mining property, I first call your attention to section 658, Civil Code of California, which defines real property, or immovable property, as:

1. Land;
2. That which is affixed to land;
3. That which is incidental or appurtenant to land;
4. That which is immovable by law.

Also, I call your attention to section 659 reading: "Land is the solid material of the earth, whatever may be the ingredients of which it is composed, whether soil, rock or other substance."

From the reading of this section it seems to me that a mine is real property.

Section 661, headed "Fixtures attached to mines," reads as follows: "Sluiceboxes, flumes, hose, pipes, railway tracks, cars, blacksmith-shops, mills, and all other machinery or tools used in working or developing a mine, are to be deemed affixed to the mine."

Section 662, under the head "Appurtenances," reads as follows: "A thing is deemed to be incidental or appurtenant to land when it is by right used with the land for its benefit, as in the case of a way, or watercourse, or of a passage for light, air, or heat from or across the land of another."

Taking into consideration the reading of the sections above referred to, my opinion is that mining property, all fixtures attached to mines, and all appurtenances thereto, are real estate. Therefore, any one selling or offering such property for sale for another for a compensation would be considered as a real estate broker or salesman within the meaning of the act. Therefore, such person should secure for himself, either a broker or a salesman license. One transaction is sufficient to constitute such person a real estate broker or salesman and should such person not have secured for himself a license at the time of negotiating and closing such transaction, he would be in violation of the law and liable to prosecution.

Further, should his right to a commission be disputed, he would not be able to bring or maintain an action in the civil courts of this state.

ADMINISTRATIVE DIVISION.

WALTER W. BRADLEY, Deputy State Mineralogist.

Personnel.

During the period, April 15–July 15, the following changes in personnel have taken place:

Mr. Forrest L. Campbell, librarian, has been transferred to the oil division as an inspector, with station at Los Angeles.

Mr. E. A. Lowe of San Francisco is temporarily filling the place of librarian.

IN THE OIL DIVISION:

Mr. R. M. Barnes, for nearly four years deputy supervisor at Coalinga, resigned to engage in commercial practice.

Mr. W. W. Copp, for the past year deputy supervisor at Taft, resigned to engage in commercial practice.

Mr. V. H. Wilhelm has been appointed Deputy Supervisor for District No. 5 with headquarters at Coalinga, to fill the position made vacant by the resignation of R. M. Barnes.

Mr. E. Huguenin, deputy supervisor, has been transferred from Santa Paula and is now in charge as Deputy Supervisor for District No. 4, with headquarters at Taft, to fill the position made vacant by the resignation of W. W. Copp.

Mr. H. A. Godde, formerly petroleum engineer in the Department of Petroleum and Gas, has been appointed Deputy Supervisor for District No. 2, with headquarters at Santa Paula, to succeed Deputy Supervisor E. Huguenin, transferred to District No. 4.

New Publications.

During the quarterly period covered by this issue, the following Bureau publications have been made available for distribution:

Bulletin No. 92, "Gold Placers of California," by Charles S. Haley. Accompanied by a topographic map in four colors showing distribution of the gravels. Price $1.50, postpaid. Extra copies of the map are available, separately, at 50 cents apiece, postpaid.

Mining in California (quarterly), April 1924, being Chapter No. 2, of State Mineralogist's Report XX, price 25 cents.

Summary of Operations, California Oil Fields: Vol. 9, Nos. 8, 9, and 10, February, March and April, 1924, respectively.

Commercial Mineral Notes: Nos. 13, 14, 15, April-June, inc. These 'notes' carry the lists of 'mineral deposits wanted' and 'minerals for sale,' issued in the form of a mimeographed sheet, monthly. It is mailed free of charge to those on the mailing list for 'Mining in California.'

DIVISION OF MINERALS AND STATISTICS.

Statistics, Museum, Laboratory.

WALTER W. BRADLEY, Deputy State Mineralogist.

STATISTICS.

Figures on the 1923 production of several of California's commercial minerals were given in the April issue of 'Mining in California,' and data on a number of additional ones are here shown in advance of the publication of the complete and detailed bulletin in course of compilation at this writing (July 15).

COAL.

Coal production in California in 1923 totaled only 1010 tons valued at $5,090, being credited to Mendocino and Riverside counties. None of it was marketed, but it was consumed for local camp purposes and for power and forge use in development work on the deposits. Besides the localities mentioned above, development work was also under way on coal deposits in San Benito and Shasta counties. In the former, at the property of the San Benito Coal Company, it is proposed to install an electric-power generating and by-product plant, rather than to ship the coal, owing to the distance from rail transportation.

Total Coal Production of California.

The very considerable output of coal in the years previous to 1883 was almost entirely from the Mount Diablo district, Contra Costa County. Later, the Tesla Mine in Corral Hollow, Alameda County, was an important producer for a few years. Stone Canyon, Monterey County, was also an important producer for a short time, and there has been some coal shipped from properties in Amador, Fresno, Orange, Riverside, and Siskiyou counties. The following tabulation gives the annual tonnages and values, according to available records:

Coal Output and Value by Years.

Year	Tons	Value	Year	Tons	Value
1861	6,620	$38,065	1893	72,603	$167,555
1862	23,400	134,550	1894	59,887	139,862
1863	43,200	248,400	1895	79,858	193,790
1864	50,700	291,525	1896	70,649	161,335
1865	60,530	348,048	1897	87,449	196,255
1866	84,020	483,115	1898	143,045	337,475
1867	124,690	716,968	1899	160,941	420,109
1868	143,676	826,137	1900	176,956	535,531
1869	157,234	904,096	1901	150,724	401,772
1870	141,890	815,868	1902	88,460	248,622
1871	152,493	876,835	1903	93,026	265,383
1872	190,859	1,097,439	1904	79,062	376,494
1873	186,611	1,073,013	1905	46,500	144,500
1874	215,352	1,238,274	1906	24,850	61,600
1875	166,638	958,169	1907	23,734	55,849
1876	128,049	736,282	1908	18,496	55,503
1877	107,789	619,787	1909	49,389	216,913
1878	134,237	771,863	1910	11,033	23,484
1879	147,879	850,304	1911	11,047	18,297
1880	236,950	1,362,463	1912	14,484	39,092
1881	140,000	805,000	1913	25,198	85,809
1882	112,592	647,404	1914	11,859	28,806
1883	76,162	380,810	1915	10,299	26,662
1884	77,485	309,950	1916	4,037	7,030
1885	71,615	286,460	1917	3,527	7,691
1886	100,000	300,000	1918	6,343	16,149
1887	50,000	150,000	1919	2,983	8,203
1888	95,000	380,000	1920	2,078	5,450
1889	121,280	288,232	1921	12,467	63,578
1890	110,711	283,019	1922	27,020	135,100
1891	93,301	204,902	1923	1,010	5,090
1892	85,178	209,711	Totals	5,205,155	$23,085,678

The tonnages in the above table for the years 1861–1886 (incl.) are taken from the U. S. Geological Survey, "Mineral Resources of the U. S., 1910," p. 107. The values assigned for the years previous to 1883 are those given by W. A. Goodyear (Mineral Res., 1882, pp. 93–94), being an average of $5.75 per ton. From 1887 to date the figures are those of the California State Mining Bureau.

DOLOMITE.

The production of dolomite for the year 1923 totaled 69,519 tons valued at $142,615, being an increase over the 52,409 tons and $114,911 of 1922, and came from a total of six quarries in Inyo, Monterey, and San Benito counties.

An important part of the tonnage being shipped is utilized as a refractory lining in the bottoms of open-hearth steel furnaces, as a substitute for magnesite. Part of the Inyo County material is used for its CO_2 by the chemical plants on Owens Lake, in the manufacture of soda ash and bicarbonate from the waters of the lake. Some also is used for terrazzo and for stucco dash-coat.

The 1923 output was distributed as follows :

County	Tons	Value
Inyo	47,542	$79,793
Monterey and San Benito*	21,977	62,822
Totals	69,519	$142,615

*Combined to conceal output of a single quarry in each.

Dolomite Production of California, by Years.

Amount and value of the output of dolomite, annually, have been as follows:

Year	Tons	Value
1915	4,192	$14,504
1916	13,313	46,566
1917	27,911	66,416
1918	24,560	79,441
1919	24,502	67,953
1920	42,388	132,791
1921	31,195	99,155
1922	52,409	114,911
1923	69,519	142,615
Totals	289,989	$764,352

FELDSPAR.

Feldspar was produced by five operators in two counties (Riverside and San Diego) during 1923, to the amount of 11,100 tons, valued at $81,800, being more than double both the quantity and value of 1922 which were 4587 tons and $37,109.

The product was used in the ceramic industry, principally in pottery, porcelain, enamel wares, also enamel brick and tile, being a constituent of both the body and the glaze, but more especially the latter. For the characteristics, grades, and marketing data of feldspar, the reader is referred to the excellent paper by Prof. Watts[1] and quoted in our report of last year.[2]

Total Feldspar Production of California.

Total amount and value of feldspar production in California since the inception of the industry are given in the following table, by years:

Year	Tons	Value	Year	Tons	Value
1910	760	$5,720	1917	11,792	$46,411
1911	740	4,560	1918	4,132	22,061
1912	1,382	6,180	1919	1,272	12,965
1913	2,129	7,850	1920	4,518	26,189
1914	3,530	16,565	1921	4,349	28,343
1915	1,800	9,000	1922	4,587	37,109
1916	2,630	14,350	1923	11,100	81,800
			Totals	54,721	$318,098

FULLER'S EARTH.

Fuller's earth includes many kinds of unctious clays. It is usually soft, friable, earthy, nonplastic, white and gray to dark green in color, and some varieties disintegrate in water. In California, fuller's earth has been used in clarifying both refined mineral and vegetable oils, and for special chemical purposes; although its original use was in

[1]Watts, A. S., The marketing of feldspar: Eng. & Min. Jour.-Press, Vol. 115, pp. 535–538, Mar. 24, 1923.

[2]Bradley, W. W., California mineral production for 1922: Cal. State Min. Bur., Bulletin 93, pp. 108–110, 1923.

fulling wool, as the name indicates. Production has come mainly from Calaveras and Solano counties, with other deposits noted also in Riverside, Fresno, Inyo, and Kern counties.

Clays of the montmorillonite and halloysite group ('rock soap') are being utilized by some of the oil refineries in lieu of true fuller's earth in the refining of petroleum products.

The production of 3650 tons, valued at $55,125, here credited to 1923, as 'fuller's earth' is in reality colloidal clay of the montmorillonite class (sold under such local names as: 'bentonite,' 'otaylite,' 'shoshonite,' derived from the locality where found). Because of its being used for clarifying and filtering processes, we have placed it, for the purposes of this statistical report, under the 'fuller's earth' heading. After all, the practical test of a fuller's earth is not so much a chemical one, as a practical one: that is, its physical capacity to absorb basic colors and to remove these colors from solution in animal, vegetable or mineral oils, also from water.

The 1923 production in California shows a decrease in tonnage, but an increase in value and came from three properties, in Inyo and San Diego counties.

Fuller's Earth Production of California, by Years.

Fuller's earth was first produced commercially in this state in 1899, and the total amount and value of the output since that time are as follows:

Year	Tons	Value	Year	Tons	Value
1899	620	$12,400	1912	876	$6,500
1900	500	3,750	1913	460	3,700
1901	1,000	19,500	1914	760	5,928
1902	987	19,246	1915	692	4,002
1903	250	4,750	1916	110	550
1904	500	9,500	1917	220	2,180
1905	1,344	38,000	1918	37	333
1906	440	10,500	1919	385	3,810
1907	100	1,000	1920	600	6,000
1908	50	1,000	1921	1,185	8,295
1909	459	7,385	1922	6,606	48,756
1910	340	3,820	1923	3,650	55,125
1911	466	5,294			
			Totals	22,637	$281,324

NOTE.—Above production, in 1922–1923, was montmorillonite (hydrous aluminum silicate) a colloidal clay, sometimes called 'rock soap,' and in part locally called 'shoshonite' from its being found near Shoshone in Inyo County; and in part 'otaylite' from Otay, San Diego County.

GEMS.

The production of gem materials in California has been somewhat irregular and uncertain since 1911. The compilation of complete statistics is difficult owing to the widely scattered places at which stones are gathered and marketed in a small way. The materials reported in 1923 totaled $13,220 in value, the increase over the figure of $1,312 in 1922 being due mainly to a slight renewal of activity in the tourmaline district of northern San Diego County, and in part to shipments of quartz crystals from Calaveras County.

The following table shows the distribution of rough, uncut gem and jeweler's materials during 1923:

County	Value	Kind
San Diego	$8,530	Tourmaline, kunzite, essonite and spessartite garnets, aquamarine and pink beryl, blue topaz, quartz crystals.
Butte	*4,690	Diamonds.
Calaveras		Quartz crystals.
Inyo		Turgite, opals, chalcedony, lapis lazuli.
Riverside		Quartz crystals, green beryl.
San Bernardino		Topaz, thomsonite.
Total value	$13,220	

*Combined to conceal output of a single operator in each.

For a detailed listing of the industrial uses of precious and semi-precious stones, the reader is referred to our statistical report for 1922.[1]

Total Production of Gem Materials in California.

The value of the gem output in California annually since the beginning of commercial production is as follows:

Year	Value	Year	Value
1900	$20,500	1912	$23,050
1901	40,000	1913	13,740
1902	162,100	1914	3,970
1903	110,500	1915	3,565
1904	136,000	1916	4,752
1905	148,500	1917	3,049
1906	497,090	1918	650
1907	232,642	1919	5,425
1908	208,950	1920	36,056
1909	193,700	1921	10,954
1910	237,475	1922	1,312
1911	51,824	1923	13,220
		Total	$2,159,024

GOLD.

Gold was the first and, for many years, the most important single mineral product of California. Although now surpassed for a number of years in annual value by petroleum, and by cement beginning with 1920, it still heads our metal list, and California continues to outrank all the other gold-producing states of the United States, including Alaska. In fact, at present California is producing approximately one-third of the gold mined in the entire United States.

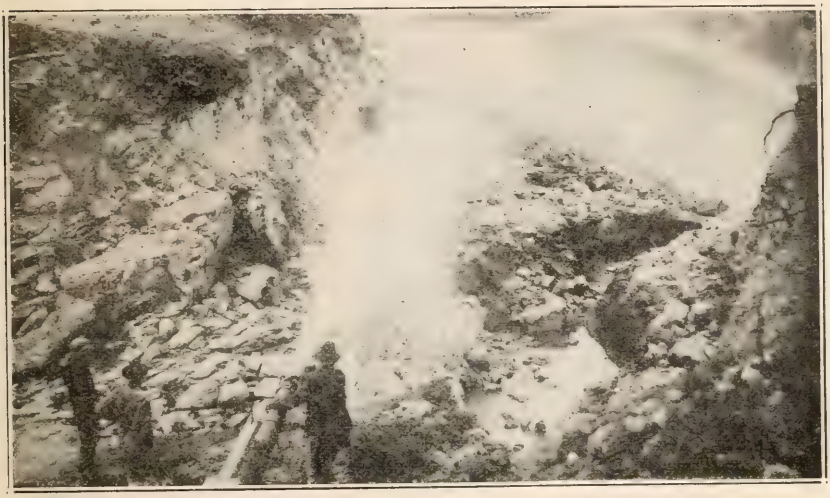
While there is some renewal of activity in the development of gold lode properties, it has not yet become reflected in an increased yield of the metal. The 1923 figures show a decrease from the 1922 yield. The continued shut-down of most of the copper mines which have always been important producers of by-product gold and silver, has also been an important factor.

[1]California mineral production for 1922: Cal. State Min. Bur., Bulletin 93, pp. 115–117, 1923.

Outlook for 1924.

According to the mid-year review of the United States Geological Survey[1] for the first six months of 1924,

"Metal mining in California was rather active during the first six months of 1924, * * * as shown by reports received from the miners by J. M. Hill, of the San Francisco office of the Geological Survey. Most of the activity has been directed to the development of gold quartz mines rather than to production, for the output of gold and silver was less than in the first six months of 1923. Five of the large Mother Lode mines—the Argonaut, Plymouth, Shawmut, Central Eureka, and Moore—are deepening their shafts. The placer output was small, because of drought; a large number of hydraulic properties in the Klamath and Sierra mountains had almost no water and therefore made but small output. The dredges maintained production at about the normal rate, but fewer boats are working. The silver mines, particularly the California Rand, curtailed production in order to carry on extensive development. The lead producers in the southern part of the state have apparently been working at the normal rate. The production of copper has been further increased; the rate during the first six months of 1924 was about 4,000,000 pounds a month. The work of development at the Engels mine may restrict the output there during the rest of the year."



Elephant Deep Hydraulic Mine, at Volcano, Amador County, Cal.

Production in 1923.

The State Mining Bureau has never independently collected statistics of gold and silver production, as there is no necessity for duplicating the very thoroughly organized work of the U. S. Geological Survey covering those metals. The data here given relative to these two metals have been received through the courtesy and cooperation of Mr. J. M. Hill, Statistician in Charge of the San Francisco branch office of the Division of Mineral Resources. Anyone wishing fuller details of the production of these metals may obtain the same by applying to the U. S. Geological Survey, Washington, D. C., or to room 305, U. S. Custom House, San Francisco, California, for a copy of the 'separate' on the subject.

The gold production of California for 1923 was distributed, by counties, as follows :

[1]U. S. Geol. Surv., Press Bulletin July 11, 1924.

Gold Production by Counties, 1923.

County	Value	County	Value
Amador	$1,734,133	Nevada	$2,282,155
Butte	487,393	Placer	75,732
Calaveras	1,205,784	Plumas	174,871
Del Norte	1,778	Sacramento	1,331,227
El Dorado	30,264	San Bernardino	210,923
Fresno	18,519	San Diego	822
Humboldt	2,260	Shasta	359,487
Imperial, Orange, Riverside*	1,126	Sierra	878,164
Inyo	36,702	Siskiyou	45,633
Kern	107,051	Stanislaus	174,814
Lassen, Merced, Modoc*	661	Trinity	617,841
Los Angeles	714	Tuolumne	261,936
Madera	12,074	Yuba	3,150,405
Mariposa	141,883		
Mono	34,661	Total	$13,379,013

*Combined to conceal output of a single producer in each.

The decline in gold yield from the 1922 figure of $14,670,346 was due to a lower production from the quartz mines, whereas the placer yield showed a slight increase. The tonnage of dry gold ores treated in 1923 was about 200,000 tons less, but the yield of gold from all other classes of ore was greater in 1923 than in 1922.

Total Gold Production of California.

Year	Value	Year	Value
1848	$245,301	1886	$14,716,506
1849	10,151,360	1887	13,588,614
1850	41,273,106	1888	12,750,000
1851	75,938,232	1889	11,212,913
1852	81,294,700	1890	12,309,793
1853	67,613,487	1891	12,728,869
1854	69,433,931	1892	12,571,900
1855	55,485,395	1893	12,422,811
1856	57,509,411	1894	13,923,281
1857	43,628,172	1895	15,334,317
1858	46,591,140	1896	17,181,562
1859	45,846,599	1897	15,871,401
1860	44,095,163	1898	15,906,478
1861	41,884,995	1899	15,336,031
1862	38,854,668	1900	15,863,355
1863	23,501,736	1901	16,989,044
1864	24,071,423	1902	16,910,320
1865	17,930,858	1903	16,471,264
1866	17,123,867	1904	19,109,600
1867	18,265,452	1905	19,197,043
1868	17,555,867	1906	18,732,452
1869	18,229,044	1907	16,727,928
1870	17,458,133	1908	18,761,559
1871	17,477,885	1909	20,237,870
1872	15,482,194	1910	19,715,440
1873	15,019,210	1911	19,738,908
1874	17,264,836	1912	19,713,478
1875	16,876,009	1913	20,406,958
1876	15,610,723	1914	20,653,496
1877	16,501,268	1915	22,442,296
1878	18,839,141	1916	21,410,741
1879	19,626,654	1917	20,087,504
1880	20,030,761	1918	16,529,162
1881	19,223,155	1919	16,695,955
1882	17,146,416	1920	14,311,043
1883	24,316,873	1921	15,704,822
1884	13,600,000	1922	14,670,346
1885	12,661,044	1923	13,379,013
		Total	$1,763,972,282

GYPSUM.

During 1923, one operator each in Imperial, Kern, Riverside and San Bernardino counties produced a total of 86,410 tons of gypsum valued at $289,136, compared with 47,084 tons, worth $188,336 in 1922. The material was utilized mainly in cement manufacture, plaster and for fertilizer. The 1923 shipments of gypsum were the largest in the history of the industry in California, the increase being due to the opening up of a deposit in western Imperial County, by the Imperial Gypsum and Oil Company.

Total Production of Gypsum in California.

Production of gypsum annually in California since such records have been compiled by this Bureau is as follows:

Year	Tons	Value	Year	Tons	Value
1887	2,700	$27,000	1906	21,000	$69,000
1888	2,500	25,000	1907	8,900	57,700
1889	3,000	30,000	1908	34,600	155,400
1890	3,000	30,000	1909	30,700	138,176
1891	2,000	20,000	1910	45,294	129,152
1892	2,000	20,000	1911	31,457	101,475
1893	1,620	14,280	1912	37,529	117,388
1894	2,446	24,584	1913	47,100	135,050
1895	5,158	51,014	1914	29,734	78,375
1896	1,310	12,580	1915	20,200	48,953
1897	2,200	19,250	1916	33,384	59,533
1898	3,100	23,600	1917	30,825	56,840
1899	3,663	14,950	1918	19,695	37,176
1900	2,522	10,088	1919	19,813	50,579
1901	3,875	38,750	1920	20,507	92,535
1902	10,200	53,500	1921	37,412	78,875
1903	6,914	46,441	1922	47,084	188,336
1904	8,350	56,592	1923	86,410	289,136
1905	12,859	54,500			
			Totals	681,052	$2,455,808

LIME.

Lime to the amount of 70,894 tons, valued at $788,834, was produced by nine plants in six counties during 1922, as compared with 57,875 tons valued at $671,747 in 1922. There were two plants each in Kern, San Bernardino and Santa Cruz counties, and one each in Shasta, Siskiyou and Tuolumne County. Previous to this present report the lime output has been recorded in 'barrels;' but as that unit is variable, and as most of the operators are now reporting in 'tons,' we have adopted the short ton instead and have converted the figures in the table of annual production to that unit, as shown below.

So far as we have been able to segregate the data, these figures include only such lime as is used in building operations. A portion is hydrated lime. Limestone utilized in sugar making, for smelter flux, as a fertilizer, and other special industrial uses, are classified under 'Industrial Materials.' That consumed in cement manufacture is included in the value of cement.

Reports from the San Francisco district indicate that the market there is being adversely affected by the importation of Canadian lime against which there is an inadequate duty.

Lime Production of California by Years.

The following tabulation gives the amounts and value of lime pro-

duced in California by years since 1894 when compilation of such records was begun by the State Mining Bureau:

Year	Tons	Value	Year	Tons	Value
1894	37,350	$318,700	1909	52,075	$577,824
1895	39,776	386,094	1910	47,951	477,683
1896	30,275	261,505	1911	42,959	390,988
1897	28,780	252,900	1912	52,212	464,440
1898	29,786	254,010	1913	61,344	528,547
1899	29,985	314,575	1914	43,996	378,663
1900	31,252	283,699	1915	35,653	286,304
1901	31,738	334,688	1916	49,364	390,475
1902	44,866	369,616	1917	50,073	311,380
1903	49,659	418,280	1918	43,684	461,315
1904	57,945	571,749	1919	42,070	552,043
1905	61,700	555,322	1920	46,314	557,232
1906	68,927	763,060	1921	46,353	610,619
1907	68,422	756,376	1922	57,875	671,747
1908	39,639	379,243	1923	70,894	788,834
			Totals	1,392,917	$13,667,911

LIMESTONE.

'Industrial' limestone was produced in nine counties during 1923, to the amount of 143,266 tons, valued at $348,464, being an increase both in quantity and value over the 1922 output of 84,382 tons, worth $282,181.

The amount here given does not include the limestone used in the manufacture of cement nor for macadam and concrete, nor of lime for building purposes; but accounts for that utilized as a smelter and foundry flux, for glass and sugar making, and other special chemical and manufacturing processes. It also includes that utilized for fertilizers (agricultural 'lime'), 'roofing gravel,' paint filler, whiting for paint, putty, kalsomine, terrazzo, paving dust, concrete filler, chicken grit, carbon dioxide gas, 'paving compound,' and facing dust for concrete pipe. That indicated in the table below as coming from Santa Clara County and a part of that from Los Angeles is calcareous marl sold for agricultural purposes. Of the total product in 1923 approximately 23,000 tons valued at $101,000 was used for agricultural purposes.

Distribution of the 1923 output was as follows:

County	Tons	Value
El Dorado	95,274	$163,987
Los Angeles	2,717	8,779
San Bernardino	5,859	28,324
Santa Clara	8,252	49,512
Santa Cruz	6,733	14,242
Tuolumne	3,140	7,680
Tulare	15,500	57,500
Contra Costa, Kern, Shasta*	5,791	18,440
Totals	143,266	$348,464

*Combined to conceal output of a single operator in each.

Limestone Production of California by Years.

The following tabulation gives the amounts and value of 'industrial' limestone produced in California by years since 1894 when compilation of such records was begun by the State Mining Bureau. These tonnages consist principally of limestone utilized for flux, glass and sugar making, agricultural, chemical, and other special industrial purposes. That utilized in cement manufacture is not included.

Year	Tons	Value	Year	Tons	Value
1894	15,420	$19,275	1910	684,635	$581,208
1895	71,355	71,690	1911	516,398	452,790
1896	68,184	71,112	1912	613,375	570,248
1897	36,796	38,556	1913	301,918	274,455
1898	27,686	24,548	1914	572,272	517,713
1899	30,769	29,185	1915	146,324	156,288
1900	32,791	31,532	1916	187,521	217,733
1901	76,937	99,445	1917	237,279	356,396
1902	71,422	90,524	1918	208,566	456,258
1903	125,919	163,988	1919	88,291	248,145
1904	40,207	87,207	1920	90,120	298,197
1905	192,749	323,325	1921	75,921	305,912
1906	80,262	162,827	1922	84,382	282,181
1907	230,985	406,041	1923	143,266	348,464
1908	273,890	297,264			
1909	337,676	419,921	Totals	5,663,316	$7,402,428

MINERAL PAINT.

Mineral paint materials were produced in California in 1923 from a total of five properties in the following three counties: Nevada, Stanislaus and Ventura. The total amounted to 1049 tons, valued at $11,773, being a decrease from the 1620 tons and $13,277 of 1922. The material shipped from Nevada County is hematite; from Stanislaus, yellow ochre; and that from Ventura, red ochre.

Mineral Paint Production of California, by Years.

The first recorded production of mineral paint materials in the state was in the year 1890. The output, showing annual amount and value, since that time, is given herewith:

Year	Tons	Value	Year	Tons	Value
1890	40	$480	1908	335	$2,250
1891	22	880	1909	305	2,325
1892	25	750	1910	200	2,040
1893	590	26,795	1911	186	1,184
1894	610	14,140	1912	300	1,800
1895	750	8,425	1913	303	1,780
1896	395	5,540	1914	132	847
1897	578	8,165	1915	311	1,756
1898	653	9,698	1916	643	3,960
1899	1,704	20,294	1917	520	2,700
1900	529	3,993	1918	728	4,738
1901	325	875	1919	1,780	17,055
1902	589	1,533	1920	779	8,477
1903	2,370	3,720	1921	446	4,748
1904	270	1,985	1922	1,620	13,277
1905	754	4,025	1923	1,049	11,773
1906	250	1,720			
1907	250	1,720	Totals	19,741	$188,448

PETROLEUM.

The crude oil production of California for 1923 amounted to a total of 262,875,690 barrels of clean oil, valued at $242,731,309 at the well. This total of quantity is compiled from the monthly production reports filed by the operators with the State Oil and Gas Supervisor, to which have been added figures for the output of a number of small operators in the Los Angeles city field not under the jurisdiction of the Supervisor, and from one property in Santa Clara County.

The question of the value of the crude oil yield, at the well, is a difficult one to settle with exactitude, principally because a large part of the output is not sold until after refining. The large refiners are also large producers of crude oil which they send direct from well to plant, hence much of the crude is not sold as such. The values used in the statistical reports of the State Mining Bureau since 1914 have been derived from averages of actual sales of crude oil of all grades in each field of the state, and these averages applied to the total yield of the respective fields. This we feel is a safer measure of commercial values than market quotations, because quotations do not always mean sales.

Features of 1923.

The outstanding feature of the year 1923 in the oil industry of California was the continued increase in Los Angeles and Orange counties due to intensive drilling of new and gusher wells yielding high-gravity oil, with consequent overproduction. This necessitated the continued shutting-in of low-gravity wells in other fields of the state. As in 1922, this resulted in further decreased output of crude oil in Fresno, Kern and Santa Barbara counties. The peak of production came in the month of August, 1923, when the state's total amounted to 26,440,005 barrels, followed by a figure only slightly less for the month of September. The increase in Los Angeles County alone was more than four-fold, while the Orange County yield was 50 per cent greater than the previous year. As in 1922, Ventura County also increased, to the extent of approximately 25 per cent.

There were three reductions in 1923 in prices quoted for crude oil at the well, above 20° Baumé gravity, announced by the marketing companies, January 6, April 10, and October 9. The reductions were proportionately greater for the specific gravities above 28° than for those below. Both in 1922 and 1923, the price reductions to a limited extent, only, affected the production total by causing the shutting-in of wells yielding oil of the lower gravities and in the districts outside of the areas where intensive campaigns of new developments were taking place. The unprecedented increase in production taxed the storage, transportation, and refining facilities of all of the marketing concerns. Shipments by sea via the Panama Canal to Atlantic seaboard points advanced to important amounts and became of vital assistance in the situation.

Estimating in January the output of the year just closed, the State Oil and Gas Supervisor[1] presents the following observations:

"California again broke all previous records in its production of petroleum by producing 263,729,000 barrels in 1923. This is about 36 per cent of the amount

[1]Bush, R. D., Weekly press bulletin, No. 431; Dept. of Petr. and Gas; Cal. State Min. Bur. Jan. 26, 1924.

produced in the entire United States, and almost double the amount produced by California in 1922, which was a record year. This great increase was due to the intensive and rapid development of the Huntington Beach, Santa Fe Springs and Long Beach fields, where initial productions of nearly all the wells were large. These three fields produced 69.4 per cent of the state's production in 1923. This tremendous production taxed the storage capacity and marketing facilities of the large companies, and caused new markets for California crude oil to be opened. About 92,000,000 barrels of crude was in storage at the end of 1923, as compared with 61,380,000 barrels at the beginning of the year, and notwithstanding about 54,455,000 barrels was shipped through the Panama Canal to eastern refineries.

"During September, 1923, production reached its maximum, and then declined, this decline continuing to the end of the year, in spite of the fact that production was resumed in some of the San Joaquin Valley fields where it had been shut in. In December, 1923, for the first time since December, 1920, storage decreased, or, in other words, consumption which includes oil shipped to eastern ports through the Panama Canal, was greater than the December production, which averaged daily 706,000 barrels. The indicated consumption of oil increased during the year from 451,613 barrels in December, 1922, to 711,459 barrels in December, 1923.

"There were three reductions in the price of oil in 1923; the first reduction was made on January 6, when all grades, including 20 degrees Baumé and above, were reduced, the highest gravity (35 degrees and above) being reduced 53 cents. The next reduction, on April 10, for the refinable oils, amounted to 41 cents for the highest grade. The third reduction, amounting to 18 cents on the highest grade, was made on October 9. Fuel oil, or the grades below 20 degrees Baumé, remained stationary during the year.

"A total of 1400 new wells was started in 1923, as compared with 1439 in 1922. During the year, 980 producing wells were completed.

"At the close of the year with the Santa Fe Springs, Huntington Beach and Long Beach fields almost completely developed, activity in the Los Angeles Basin centered in Torrance field, but this field does not give promise of being as prolific, or of developing as rapidly, as the above mentioned fields, since most of the acreage is held in comparatively large leases by the larger companies. Activity is also gradually increasing in the older fields of the San Joaquin Valley, and the outlook for the petroleum industry for the year 1924 looks bright at the present time. The year started out with an increase in the price of all grades of oil amounting to 25 cents, effective January 22, and the prospect of additional increases during the year is good."

Outlook for 1924.

The outlook for the current year is for a somewhat lower total quantity than in 1923. At the same time, consumption is showing an unexpected decline, due to a number of causes, as noted by Bush[1] elsewhere herein.

Production Figures.

The following table gives the production and value by counties for 1923, compared with the 1922 figures:

TABLE A.

Production and Value of Oil, by Counties.

County	1922		1923	
	Barrels	Value	Barrels	Value
Fresno	9,265,526	$9,895,582	5,061,542	$3,593,695
Kern	53,512,157	64,803,222	45,952,794	37,629,300
Los Angeles	37,726,367	52,930,093	158,665,019	154,063,733
Orange	31,049,491	36,483,162	46,474,921	40,897,930
San Luis Obispo	33,856	31,892	32,988	19,793
Santa Barbara	3,931,155	3,974,398	3,061,947	2,394,433
Ventura	2,933,685	5,236,628	3,610,794	4,109,084
San Mateo and Santa Clara*	15,985	26,288	15,685	23,341
Totals	138,468,222	$173,381,265	262,875,690	$242,731,309

*Combined to conceal output of a single operator in San Mateo County.

[1] Bush, R. D., Features of production, first half of 1924, p. 201, *ante*.

The foregoing totals show a state average price of $0.923 per barrel for the year 1923, as compared to $1.249 in 1922. As already noted in a preceding paragraph, the drop in value was due to an overproduction in the higher grades of crude oil and a consequently greater proportional drop in prices for the higher grades.

TABLE B.

Total Petroleum Production in California.

Year	Barrels	Value	Year	Barrels	Value
To and inc. 1875	(a) 175,000	(b) $472,500	1900	4,329,950	$4,152,928
1876	12,000	30,000	1901	7,710,315	2,961,102
1877	13,000	29,250	1902	14,356,910	4,692,189
1878	15,227	30,454	1903	24,340,839	7,313,271
1879	19,858	39,716	1904	29,736,003	8,317,809
1880	40,552	60,828	1905	34,275,701	9,007,820
1881	99,862	124,828	1906	32,624,000	9,238,020
1882	128,636	257,272	1907	40 311,171	16,783,943
1883	142,857	285,714	1908	48,306,910	26,566,181
1884	262,000	655,000	1909	58,191,723	32,398,187
1885	325,000	750,750	1910	77,697,568	37,689,542
1886	(a) 377,145	(b) 870,205	1911	84,648,157	40,552,088
1887	678,572	1,357,144	1912	89,689,250	41,868,344
1888	690,333	1,380,666	1913	98,494,532	48,578,014
1889	303,220	368,048	1914	102,881,907	47,487,109
1890	307,360	384,200	1915	91,146,620	43,503,837
1891	323,600	401,264	1916	90,262,557	57,421,334
1892	385,049	561,333	1917	95,396,309	86,976,209
1893	470,179	608,092	1918	99,731,177	127,459,221
1894	783,078	1,064,521	1919	101,182,962	142,610,563
1895	1,245,339	1,000,235	1920	103,377,361	178,394,937
1896	1,257,780	1,180,793	1921	112,599,860	203,138,225
1897	1,911,569	1,918,269	1922	138,468,222	173,381,265
1898	2,249,088	2,376,420	1923	262,875,690	242,731,309
1899	2,677,875	2,660,793			
			Totals	1,857,529,873	$1,612,091,748

[a] U. S. G. S., Min. Res. of U. S., 1886, p. 440, for quantities to and including 1886.
[b] Values have been estimated for the years to and including 1886, after consulting a number of contemporaneous publications, including the Mining & Scientific Press, Reports of the State Mineralogist, and U. S. Reports. The figures for 1887 to date are from records of the State Mining Bureau.

Specific Gravities of Oils Produced.

The proportion of heavy and light oil produced in the various fields is shown in Table C, following, for which we are indebted to the Standard Oil Company. Under present practice, oil below 18° Baumé may be considered as largely refinable for fuel oil and lubricants, while the lighter oils yield varying amounts of the higher refined products with corresponding proportions of residuum and fuel oil. Specific gravities in California range from 8° Baumé in the Casmalia field, Santa Barbara County, to 56° Baumé in Ventura County.

California crude oils are all essentially of asphalt base, with a few notable exceptions. In the following localities are wells yielding crudes containing both asphalt and paraffine constituents: Oil City field, Coalinga; a few deep wells in East Side field, Coalinga; a considerable part of the Ventura County fields; Western Minerals area, south of Maricopa; Wheeler Ridge, Kern County.

TABLE C.

Production of Light and Heavy Oil, by Fields, 1923.

	Under 18° (barrels)	18° and over (barrels)	Total (barrels)
Kern River	6,734,652	----------	6,734,652
McKittrick	2,221,903	----------	2,221,903
Midway-Sunset	9,619,212	26,164,297	35,783,509
Lost Hills and Belridge	482,267	1,341,659	1,823,926
Wheeler Ridge	----------	128,588	128,588
Coalinga	3,598,008	1,536,864	5,134,872
Santa Maria-Lompoc	1,781,971	1,189,361	2,971,332
Ventura-Newhall	61,292	3,641,704	3,702,996
Los Angeles-Salt Lake	1,093,351	128,755	1,222,106
Whittier-Fullerton	668,877	16,825,425	17,494,302
Santa Fe Springs	----------	80,266,082	80,266,082
Huntington Beach	449,653	34,469,316	34,918,969
Signal Hill-Long Beach	78,886	68,838,681	68,917,567
Torrance-Redondo	377,282	2,783,335	3,160,617
Summerland	51,110	----------	51,110
Watsonville	23,725	----------	23,725
Dominguez	----------	155,532	155,532
Totals	27,242,189	237,469,599	264,711,788

Oil in 'Storage.'

Field, refinery, pipe-line and tank-farm stocks of crude, residuum and tops totaled 91,925,153 barrels[1] on December 31, 1923, compared with 61,384,164 barrels on December 31, 1922, distributed as follows:

	Dec. 31, 1923	Dec. 31, 1922
Heavy crude, heavier than 20° A. P. I., including residuum	43,614,271	40,857,761
Refinable crude, 20° A. P. I. and lighter	35,559,054	17,613,591
Tops	12,751,828	2,912,812
Totals	91,925,153	61,384,164
Total quantity of above products held at refineries	29,763,653	11,809,691
Total quantity of above products held in fields, pipe-lines, and tank-farms	62,161,500	49,574,473
Total stocks as above	91,925,153	61,384,164

Proved Oil Land.

The total proved oil land of the state increased to 116,868 acres in 1923, from the 112,761 acres of 1922. Kern County increased 3395 acres, and Los Angeles, 1089 acres. Of this 1923 total, 19,932 acres, being owned by federal, state and city governments or for other reasons, are not assessable for the support of the Department of Petroleum and Gas of the State Mining Bureau. The acreage in 1923 was distributed by counties as follows:

[1]Standard Oil Bulletin, February 1924, p. 11.

TABLE D.

Proved Oil Land and Number of Wells, 1923.

County	Land (acres)	Number wells
Fresno	14,600	883
Kern	72,371	5,817
Los Angeles	8,558	1,780
Orange	7,242	915
San Luis Obispo	772	18
San Mateo	-------	4
Santa Barbara	9,303	387
Santa Clara	80	12
Ventura	3,942	516
Totals	116,868	10,332

PUMICE AND VOLCANIC ASH.

The production of pumice and volcanic ash for the year 1923 amounted to 2936 tons valued at $16,309 and came from properties in Imperial, Inyo and Kern counties. This is an increase both in tonnage and value over the 1922 shipments. The material from Imperial County is of the vesicular, block variety and was sold for abrasive purposes and for concrete aggregate; that from Inyo and Kern is the volcanic ash, or tuff, variety and was employed in making soap and cleanser compounds.

Total Pumice Production of California.

Commercial production of pumice in California was first reported to the State Mining Bureau in 1909, then not again until 1912, since which year there has been a small annual output, as indicated by the following table:

Year	Tons	Value	Year	Tons	Value
1909	50	$500	1917	525	$5,295
1910	----------	----------	1918	2,114	28,669
1911	----------	----------	1919	2,388	43,657
1912	100	2,500	1920	1,537	25,890
1913	3,590	4,500	1921	406	6,310
1914	50	1,000	1922	613	4,248
1915	380	6,400	1923	2,936	16,309
1916	1,246	18,092			
			Totals	15,935	$163,370

QUICKSILVER.

Quicksilver was produced in California in nine counties during 1923, to the amount of 5458 flasks, valued at $332,851, being approximately a 60% increase both in amount and value over the 1922 output of 3466 flasks and $191,851. The average price received during 1923, according to the producers' reports to the State Mining Bureau, was $60.98 per flask, as against $55.35 in 1922, and the record average of $114.03 for the year 1918.

The average of San Francisco quotations for 1923 was $65.68 per flask, the price declining from $70.70 in the first week of January to $59.75 in the last week of December. For the current year, 1924, the quotations are ranging somewhat higher.

According to the Bureau of Foreign and Domestic Commerce records, there was imported a total of 18,073 flasks of quicksilver in 1923, mainly from Spain and Italy; and there was 318 flasks exported.

The tariff act of 1922 provides for an import duty of 25 cents per pound, or $18.75 per flask (75 pounds, net), which became effective September 21, 1922.

The U. S. Geological Survey reports the total production of the United States for 1923 at 7937 flasks, valued at $521,302 (using the $65.68 average of quotations). Outside of California, the principal yield was from Texas, with a few flasks from Nevada, Oregon and Idaho. California's contribution was 69% of the total.

The increase in 1923 was due to resumption of production at the New Idria mine, San Benito County. There was no production from the Guadalupe mine, Santa Clara County, nor from the Oceanic mine, San Luis Obispo County. A rotary furnace has been installed at the Rinconada mine, in the latter county, and production begun.

The 1923 quicksilver production of California was distributed by counties, as follows:

Quicksilver Production by Counties, 1923.

County	Flasks	Value
Lake	17	$1,050
Napa	157	9,759
Sonoma	528	31,147
Kings, Monterey, San Benito, San Luis Obispo, Santa Clara, Solano*	4,758	290,895
Totals	5,458	$332,851

*Combined to conceal output of a single operator in each.

Total Quicksilver Production of California.

Total amount and value of the quicksilver production of California, as shown in available records, is given in the following tabulation:

Year	Flasks	Value	Average price per flask	Year	Flasks	Value	Average price per flask
1850	7,723	$768,052	$99 45	1887	33,760	1,430,749	$42 38
1851	27,779	1,859,248	66 93	1888	33,250	1,413,125	42 50
1852	20,000	1,166,600	58 33	1889	26,464	1,190,880	45 00
1853	22,284	1,235,648	55 45	1890	22,926	1,203,615	52 50
1854	30,004	1,663,722	55 45	1891	22,904	1,036,406	45 25
1855	33,000	1,767,150	53 55	1892	27,993	1,139,595	40 71
1856	30,000	1,549,500	51 65	1893	30,164	1,108,527	36 75
1857	28,204	1,374,381	48 73	1894	30,416	934,000	30 70
1858	31,000	1,482,730	47 83	1895	36,104	1,337,131	37 04
1859	13,000	820,690	63 13	1896	30,765	1,075,449	34 96
1860	10,000	535,500	53 55	1897	26,691	993,445	37 28
1861	35,000	1,471,750	42 05	1898	31,092	1,188,626	38 23
1862	42,000	1,526,700	36 35	1899	29,454	1,405,045	47 70
1863	40,531	1,705,544	42 08	1900	26,317	1,182,786	44 94
1864	47,489	2,179,745	45 90	1901	26,720	1,285,014	48 46
1865	53,000	2,432,700	45 90	1902	29,552	1,276,524	43 20
1866	46,550	2,473,202	53 13	1903	32,094	1,335,954	42 25
1867	47,000	2,157,300	45 90	1904	*28,876	1,086,323	37 62
1868	47,728	2,190,715	45 90	1905	24,655	886,081	35 94
1869	33,811	1,551,925	45 90	1906	19,516	712,334	36 50
1870	30,077	1,725,818	57 38	1907	17,379	663,178	38 16
1871	31,686	1,999,387	63 10	1908	18,039	763,520	42 33
1872	31,621	2,084,773	65 93	1909	16,217	773,788	47 71
1873	27,642	2,220,482	80 33	1910	17,665	799,002	45 23
1874	27,756	2,919,376	105 18	1911	19,109	879,205	46 01
1875	50,250	4,228,538	84 15	1912	20,600	866,024	42 04
1876	75,074	3,303,256	44 00	1913	15,661	630,042	40 23
1877	79,396	2,961,471	37 30	1914	11,373	557,846	49 05
1878	63,880	2,101,652	32 90	1915	14,199	1,157,449	81 52
1879	73,684	2,194,674	29 85	1916	21,427	2,003,425	93 50
1880	59,926	1,857,706	31 00	1917	24,382	2,396,466	98 29
1881	60,851	1,815,185	29 83	1918	22,621	2,579,472	114 03
1882	52,732	1,488,624	28 23	1919	15,200	1,353,381	89 04
1883	46,725	1,343,344	28 75	1920	10,278	775,527	75 45
1884	31,913	973,347	30 50	1921	3,157	140,666	44 56
1885	32,073	986,245	30 75	1922	3,466	191,851	55 35
1886	29,981	1,064,326	35 50	1923	5,458	332,851	60 98
				Totals	2,197,908	$107,366,308	--------

*Flasks of 75 lbs. since June 1904; of 76½ lbs. previously.

SALT.

Most of the salt produced in California is obtained by evaporating the waters of the Pacific Ocean, plants being located on the shores of San Francisco, Monterey and San Diego bays, and at Long Beach. Additional amounts are derived from lakes and lake beds in the desert regions, mainly in Kern and San Bernardino counties. A small amount of valuable medicinal salts is obtained by evaporation of the water of Mono Lake, Mono County.

Distribution of the 1923 salt production of California, by counties was as follows:

County	Tons	Value
Alameda	177,389	$585,585
Kern	18,921	97,336
San Bernardino	17,350	65,550
San Mateo	35,757	199,192
Los Angeles, Mono[1], Monterey, San Diego*	26,562	183,007
Totals	275,979	$1,130,670

[1]Medicinal salts. *Combined to conceal output of a single operator in each.

The above returns show an increase both in tonnage and value over the 1922 figures, establishing a new record for this industry in California. There were eight plants operating in Alameda County, and a total of ten plants in the other counties tabulated, being a decrease of four from the total number operated in 1922. The outlook for the current year, 1924, is that there will be an overproduction in the San Francisco Bay district at least, due to the dry season.

Production of Salt in California, by Years.

Amount and value of annual production of salt in California from 1887 is shown in the following tabulation:

Year	Tons	Value	Year	Tons	Value
1887	28,000	$112,000	1906	101,650	$213,228
1888	30,800	92,400	1907	88,063	310,967
1889	21,000	63,000	1908	121,764	281,469
1890	8,729	57,085	1909	155,680	414,708
1891	20,094	90,303	1910	174,920	395,417
1892	23,570	104,788	1911	173,332	324,255
1893	50,500	213,000	1912	185,721	383,370
1894	49,131	140,087	1913	204,407	462,681
1895	53,031	150,576	1914	223,806	583,553
1896	64,743	153,244	1915	169,028	368,737
1897	67,851	157,520	1916	186,148	455,695
1898	93,421	170,855	1917	227,825	584,373
1899	82,654	149,588	1918	212,076	806,328
1900	89,338	204,754	1919	233,994	896,963
1901	126,218	366,376	1920	230,638	972,648
1902	115,208	205,876	1921	197,989	832,702
1903	102,895	211,365	1922	223,238	819,187
1904	95,968	187,300	1923	275,979	1,130,670
1905	77,118	141,925	Totals	4,586,527	$13,208,993

SILVER.

Except for the silver mines of the Randsburg district in San Bernardino County the past five years, the production of silver in Cali-

fornia is largely as a by-product from its association with copper, lead, zinc and gold ores. As explained under gold, the State Mining Bureau does not collect the statistics of silver production independently of the U. S. Geological Survey.

The average price of domestic silver during 1923 was 82¢ per ounce at New York as compared with $1.00 (under the Pittman Act) in 1922 and 1921, and 54.8¢ in 1914. Purchases of silver by the government, under the Pittman Act ceased after June, 1923.

The following paragraph is quoted from the U. S. Geological Survey press bulletin, by courtesy of Mr. J. M. Hill,[1] statistician in charge of the San Francisco branch office:

"The output of silver in 1923 was 3,559,442 fine ounces, which was 459,377 ounces greater than in 1922. Due to the decline in prices from $1.00 in 1922 to an average of $0.82 an ounce in 1923, the value of the silver output was $181,323 less. The output of silver from dry silver ores increased about 377,000 ounces, from copper ores about 20,000 ounces, and from lead ores 66,560 ounces, but from dry gold ores about 15,000 ounces less silver were recovered than in 1922."

The distribution of the 1923 silver yield, by counties, was as follows:

Silver Production by Counties, 1923.

County	Value	County	Value
Amador	$15,153	Nevada	$30,534
Butte	1,756	Placer	297
Calaveras	7,316	Plumas	243,970
Del Norte	9	Sacramento	2,566
El Dorado	185	San Bernardino	2,225,959
Fresno	128	San Diego	144
Humboldt	12	Shasta	47,706
Imperial, Orange, Riverside*	16,736	Sierra	6,134
Inyo	265,023	Siskiyou	298
Kern	33,151	Stanislaus	833
Lassen, Merced, Modoc*	54	Trinity	5,816
Los Angeles	6	Tuolumne	2,801
Madera	541	Yuba	6,760
Mariposa	1,735		
Mono	3,120	Total	$2,918,743

*Combined to conceal output of a single producer in each.
[1]U. S. Geol. Surv. Press Bulletin, July, 1924.

Silver Production of California, by Years.

The value of the silver produced in California each year since 1880 has been as follows, the data previous to 1887 being taken from the reports of the Director of the Mint. There are no data available for the years previous to 1880:

Year	Value	Year	Value
1880	$1,140,556	1902	$616,412
1881	750,000	1903	517,444
1882	845,000	1904	873,525
1883	1,460,000	1905	678,494
1884	(a) 4,185,101	1906	817,830
1885	2,568,036	1907	751,646
1886	1,610,626	1908	873,057
1887	1,632,004	1909	1,091,092
1888	1,700,000	1910	993,646
1889	1,065,281	1911	673,336
1890	1,060,613	1912	799,584
1891	953,157	1913	832,553
1892	463,602	1914	813,938
1893	537,158	1915	851,129
1894	297,332	1916	1,687,345
1895	599,790	1917	1,462,955
1896	422,464	1918	1,427,861
1897	452,789	1919	1,240,051
1898	414,055	1920	1,859,896
1899	504,012	1921	3,629,223
1900	(b) 724,500	1922	3,100,065
1901	(b) 571,849	1923	2,918,743
		Total	$52,467,750

[a] Lawver, A. M., in Production of Precious Metals in United States: Report of Director of Mint, 1884, p. 175; 1885.
[b] Recalculated to 'commercial' from 'coining value,' as originally published.

LIBRARY.

E. A. Lowe, Librarian.

In addition to the numerous standard works, authoritative information on many phases of the mining and mineral industry is constantly being issued in the form of reports and bulletins by various government agencies.

The library of the State Mining Bureau contains some five thousand selected volumes on mines, mining and allied subjects, and it is also a repository for reports and bulletins of the technical departments of federal and state governments and of educational institutions, both domestic and foreign.

It is not the dearth of the latter publications, but rather a lack of knowledge of just what has been published and where the reports may be consulted or obtained, that embarrasses the ordinary person seeking specific information.

To assist in making the public acquainted with this valuable source of current technical information, 'Mining in California' contains under this heading a list of all books and official reports and bulletins received, with names of publishers or issuing departments.

Files of all the leading technical journals will be found in the library, and county and state maps, topographical sheets and geological folios. Current copies of local newspapers published in the mining centers of the State are available for reference.

The library and reading room are open to the public during the usual office hours, when the librarian may be freely called upon for all necessary assistance.

OFFICIAL PUBLICATIONS RECEIVED.

Governmental.

U. S. Geological Survey:

Bulletin 752—Coal Resources of the Raton Coal Field, Colfax County, New Mexico. By Willis T. Lee.

Bulletin 754—The Ruby-Kuskokwim Region, Alaska. By I. B. Mertie, Jr., and G. L. Harrington.

Bulletin 723—Geology and Ore Deposits of the Manhattan District, Nevada. By Henry G. Ferguson.

Bulletin 746—Geologic Literature on North America. By John M. Nickles.

Prof. Paper 126—Geology of the Coastal Plain of Texas West of Brazos River. By Alexander Denssen.

Prof. Paper 132—An Early Florule from Central Texas. By E. W. Berry.

Prof. Paper 132-D—The Evolution and Disintegration of Matter. By Frank Wigglesworth Clarke.

Prof. Paper 132-E—An Early Eocene Florule from Central Texas. By Edward Wilbur Berry.

Mineral Resources of the United States:

Natural Gas in 1922.

Stone in 1922. By G. T. Loughlin and A. T. Coons.

Gold, Silver, Copper, Lead and Zinc in Arizona in 1922. By V. C. Heikes.

Gold, Silver, Copper, Lead and Zinc in Montana in 1922. By C. N. Gerry.

Gold, Silver, Copper, Lead and Zinc in California and Oregon in 1922. By James M. Hill.

Gold, Silver, Copper, Lead and Zinc in Utah in 1922. By V. C. Heikes.

Copper in 1922. By H. A. C. Jenison.

Mineral Resources of the United States in 1920. By R. W. Stone.

Feldspar in 1922. By Frank J. Katz.
Cobalt, Molybdenum, Nickel, Tantalum, Titanium, Tungsten, Radium, Uranium, and Vanadium in 1922. By Frank L. Hess.
Gold, Silver, Copper, Lead and Zinc in Colorado in 1922.
Part I—Metals, 1921.
Part II—Non-Metals, 1921.
Natural Gas Gasoline in 1922.
Sulphur and Pyrites in 1923.
Carbon Black Produced from Natural Gas in 1922.

U. S. Bureau of Mines:

Bulletin 214—Tests of Marine Boilers. By Henry Kreisinger, John Blizard, A. R. Mumford, R. J. Cross, W. R. Argyle, and R. A. Sherman.
Bulletin 225—Stone Dusting or Rock Dusting to Prevent Coal Dust Explosions as Practised in Great Britain and France. By G. S. Rice.
Bulletin 203—Central District Bituminous Coals as Water-Gas Generator Fuels. By W. W. Odell.
Technical Paper 337—Carbon Monoxide Hazards from House Heaters Burning Natural Gas. By G. W. Jones and others.
Technical Paper 353—Quarry Accidents in the United States in 1922. By W. W. Adams.
Technical Paper 323-A—U. S. Government Specification for Lubricants and Methods for Testing.
Technical Paper 317—Silver in Chlorides Volatilization. By C. M. Bouton, W. C. Riddell and L. H. Duschals.

Reports of Investigations:

Serial No. 2580—Coal-Mine Fatalities in February, 1924. By W. W. Adams.
Serial No. 2581—Approval System of the Bureau of Mines as Applied to Permissible Storage-Battery Locomotives. By L. C. Ilsley and H. B. Brunot.
Serial No. 2582—The Distribution of Sulphur in Crude Petroleum. By N. A. C. Smith and D. D. Stark.
Serial No. 2583—The Hazards of Non-Permissible Explosives. By S. P. Howell and M. W. von Bernewitz.
Serial No. 2584—Some Effects on Man of High Temperature. By W. J. McConnell and R. R. Sayers.
Serial No. 2585—Mining Limestone for Lime Manufacture. By Oliver Bowles.
Serial No. 2586—The Float-and-Sink Test for Fine Coal. By B. M. Bird and H. E. Messmore.
Serial No. 2587—New Uses of Nonmetallic Minerals. By W. M. Myers.
Serial No. 2588—Fractional "Eduction" of Oil from Oil Shale. By Martin J. Gavin and Lewis C. Karrick.
Serial No. 2589—Explosives Used in January, 1924. By W. W. Adams.
Serial No. 2590—Development of Workmen's Compensation Insurance for Metal Mines. By Byron O. Pickard.
Serial No. 2591—The Carbon Monoxide Self-Rescuer. By A. C. Fieldner, S. H. Katz, and D. A. Reynolds.
Serial No. 2592—Coal-Mine Fatalities in the United States and Europe. By W. W. Adams.
Serial No. 2593—Carbon Monoxide Poisoning in Homes and Industries. By R. R. Sayers.
Serial No. 2594—Tests of a Commercial Solution Used to Reduce the Hazard of Co Poisoning in Garages. By A. C. Fieldner and W. P. Yant.
Serial No. 2595—Properties of Crude Oils from California. By A. J. Kraemer and H. M. Smith.
Serial No. 2596—The Production of Lime from Small Stone. By W. M. Myers.
Serial No. 2597—Present Tendencies in Electric Brass-Furnace Practice. By H. W. Gillett and E. L. Mack.
Serial No. 2598—Explosives Used in February, 1924. By W. W. Adams.
Serial No. 2599—Radio as a Method for Underground Communication in Mines. By J. J. Jakosky.
Serial No. 2600—Coal-Mine Fatalities in March, 1924. By W. W. Adams.
Serial No. 2601—Approved System of the Bureau of Mines, as Applied to Permissible Storage-Battery Locomotives. By L. C. Ilsley and H. B. Brunot.
Serial No. 2602—Tests on the Leakage of Mine Ventilating Doors. By J. W.

Paul, G. E. McElroy, and H. P. Greenwald.
Serial No. 2603—Assay Retort Studies of Ten Typical Oil Shales. By W. L. Finley, J. W. Horne, D. W. Gould, and A. D. Bauer.
Serial No. 2604—Combustibility of Coke and Rate of Combustion. By T. L. Joseph.
Serial No. 2605—Explosives Used in March, 1924. By W. W. Adams.
Serial No. 2606—Tentative Specifications for Rock Dusting to Prevent Coal-Dust Explosions in Mines. By George S. Rice, J. W. Paul, and Dr. R. R. Sayers.
Serial No. 2607—Premium Rates for Compensation Insurance for Underground Metal-Mine Workers. By Byron O. Pickard.
Serial No. 2608—Properties of California Crude Oils. II. Additional Analyses. By A. J. Kraemer and H. M. Smith.
Serial No. 2609—Firing a Hand-Fired Down-Draft Furnace. By J. F. Barkley.
Serial No. 2610—Coal-Mine Fatalities in April, 1924. By W. W. Adams.

U. S. National Museum:

Contributions from the U. S. National Herbarium. Vol. 22, Part 8. By S. F. Blake.
Contributions from the U. S. National Herbarium. Vol. 24, Part 5. By Wilson Popenoe.
Bulletin 104—The Foraminifera of the Atlantic Ocean. By Joseph Augustine Cushman.
Vol. 22, Part 7—The North American Species of Aristida. By A. S. Hitchcock.

U. S. Department of Commerce:

Supplement of Annual List of Publications. March 31, 1924.
Bureau of Foreign and Domestic Commerce Reports. Review of 1923, Nos. 3 and 4. By Julius Klein, Director.

Monthly Summary of Foreign Commerce of the United States:
Part I, March, 1924.
Part II, March, 1924.
Part III, April, 1924.
Report No. 54, 1922.
Reports Nos. 1 and 2, 1923.

State of California:

Department of Public Works:
Division of Water Rights.
Proceedings of the Sacramento River Problems Conference.
The California State History Association:
California History Nugget, Vol. I, No. 5.

Florida Geological Survey:

Fifteenth Annual Report, 1924.

Idaho Bureau of Mines and Geology:

Twenty-fifth Annual Report of the Mining Industry of Idaho for the Year 1923.
Bulletin 6—Geology and Water Resources of the Goose Creek Basin, Cassia County, Idaho. By A. M. Piper.

Illinois, State Geological Survey:

Bulletin 43—Geology and Mineral Resources of the King's Quadrangle. By J. H. Bretz.
Map of Illinois.
Press Bulletin—Extension of Allendale Oil Fields. By D. M. Collingwood.

Kentucky Geological Survey:

Geological Research in Kentucky. By W. R. Jillson.
Relief Map, State of Kentucky.

Mississippi State Geological Survey:

Bulletin 18—A Questionnaire on the Mineral Resources of Mississippi and the Work of the State Geological Survey. By E. N. Lowe.
Bulletin 19—The Bauxite Deposits of Mississippi. By P. F. Morse.

North Carolina Geological and Economic Survey:

Forest Division No. 9. March, 1924.

Bulletin 30—Wood-using Industries of North Carolina. By R. K. Helpenstine, Jr.

Natural Resources:

Vol. II, No. 2. May 17, 1924.

Vol. II, No. 3. May 31, 1924.

Vol. II, No. 4. June 14, 1924.

Circular No. 9—Federal Forest Purchases and Forest Recreation. By Verne Rhoades.

Pennsylvania Geological Survey:

The Oil and Gas Fields of Pennsylvania. By H. G. Ashley.

Oil Resources in Coals and Carbonaceous Shales of Pennsylvania. By Chas. R. Fettke.

Bulletin 81—Volatile Matter in Pennsylvania Coals. By James D. Sisler.

Bulletin 82—Roofing Granules Industry in Southeastern Pennsylvania. By R. W. Stone.

Bulletin 83—The Living Earth. By Geo. H. Ashley.

Bulletin 84—Coal Reserves in Clarion County, Pennsylvania.

Bulletin 85—Coal Reserves in Jefferson County, Pennsylvania. By James D. Sisler.

South Dakota Geological Survey:

Circular 14—Oil and Gas Prospects in Southern Perkins County. By Gail F. Moulton.

Bulletin 12—Amphibians and Reptiles of South Dakota. By W. H. Over.

Virginia Geological Survey:

Bulletin 24—The Geology and Mineral Resources of Wise County, and the Coal-Bearing Portion of Scott County, Virginia. By J. B. Eby.

Wisconsin Geological and Natural History Survey:

Soil Maps. Accompanying Bulletins 54–A to 54–D, inclusive. Soil Series 23–26, inclusive. Buffalo Co., Waupaca Co., Jackson Co., Centagamie Co., Wisconsin.

Soil Maps. Accompanying Bulletins 52–A to 52–D, inclusive. Soil Series 16–19, inclusive. South part of North Central Wisconsin. Portage, Wood and Door Counties.

Canada:

Ontario, Department of Mines, Province of:

Ontario, Canada, Mines and Mineral Resources, 1924.

Press Bulletin.

Alberta:

Geology Along the Blackstone Brazean and Pembina Rivers in the Foothills Belt. By John A. Allan and Ralph L. Rutherford.

Mexico:

Boletin Minero. Organo del Departamento de Minas. Tomo XV, Numeros 5 y 6. Mayo, y Junio De 1923.

Boletin del Petroleo. Vol. XVI, Nos. 3 and 4, 1923.

Boletin del Departamento de sa Estadistica Nacional. 1924.

Finland:

Bulletin 62—Tohmajarvi-Konglomeratet Och Dess Forhallande Till Kaleviska Skifferformationen. By W. W. Wilkman.

Bulletin 63—Uber Einen Quarzsyenitporphyr von Saarisselka im Finnischen Lappland. By Victor Hackman.

Bulletin 61—Der Pyroxen-Granodiorit von Kakskerta Bei Abo und Seine Modifikationen. By Victor Hackman.

Bulletin 59—Den Quartit von Kallinkangas, Seine Wellenfurchen und Trockenrisse. By Victor Hackman.

Bulletin 60—Studies on the Quaternary Varve Sediments in Southern Finland. By Matti Sautamo.

Bulletin 57—Petrologishe Untersuchungen der Granito-Dioritisch en Gesteine Sud-Ostbothniens. By Heihi Vayrynen.
Bulletin 57—Commission Geologique de Finlande. 1923.
Bulletin 58—On Migniatites and Associated Pre-Cambrian Rocks of Southwestern Finland. By G. G. Sederholm. 1923.
Bulletin 64—De la Commission Geologique de Finlande. Die Jatulischen Bildinigen von Suojarvi in Ostfinnland. By Von Adolf A. Th. Metzger.
Bulletin 65—Uber die Petrologie des Otravaaragebietes im Ostlichen Finland. By von Marth Saxen.

New South Wales:

Bulletin 5—Antimony, Arsenic, Bismuth, Molybdenum, Tungsten. By E. J. Kenny.
Bulletin 4—Tron. By L. F. Harper, F. G. S.

New Zealand:

Geological Survey Branch of Department of Mines:
Palaeontological Bulletin No. 1—The Fossil Cirripedes of New Zealand. By Thomas H. Withers, F. G. S.-F. Z. S.

Alsace Lorraine:

Mitteilungen der Geologischen Landesanstalt von Elsas-Lothringen:
B and X Heft 3.
B and XI Heft 1.
B and XI Heft 2.
B and XII Heft 1.
B and XII Heft 2.

Bulletin de Service de la Carte Geologique d' Alsace et de Lorraine, Tome', Fascicule' avec 3 Planches. Tome' 1 Fascicule 2 avec 5 Planches.

Poland:

Legation of Poland for 1922–1923.
Supreme Council National Economy:
Separation of Aluminum-Sulphate from Iron by Means of Alcohol. No. 41. Scientific-Technical Section.
The Evolution of Mineral Composition of the Skeletons of Organisms. No. 15. Scientific-Technical Section.
The Ways of the Development of the Asbestos Industry. No. 36. Scientific-Technical Section.

South Africa, Union of:

The Gold of the Rand.

Queensland, Department of Mines:

Queensland Geological Survey Pub. 274—The Geology of the Cairns Hinterland and Other Parts of North Queensland. By H. I. Jensen, D. Sc.
Pub. 272—Geology of the Walloon-Rosewood Coalfield. By A. H. Reid, A. S. T. C.

New South Wales:

Australia Museum, Annual Report.

Japan:

Cretaceous Trigoniae from South-Western Japan. By S. Yehara.

Societies and Educational Institutions.

Colorado School of Mines:

Quarterly Vol. 17, Nos. 3 and 4.
Vol. 18, Nos. 1, 3 and 4.
Vol. 19, Nos. 1 and 2.

University of Kansas:
Science Bulletin Vol. XIV—Entomology Number 5.

Universite de Strasbourg:
Tome I, Pascicule I and II.
Band X, Heft 3.
Band XI, Heft 1.
Heft 3.
Band XII, Heft 1.
Heft 2.

California Metal and Mineral Producers Association:
Bulletin 51.

Canadian Institute of Mining and Metallurgy, The:
No. 146, June, 1924.

Institution of Mining and Metallurgy:
Bulletin 236, 1924.
Bulletin 233, February, 1924.
Bulletin 234, March, 1924.

Journal of the Western Society of Engineers:
Vol. XXVIII, January and December, 1923. Papers, Discussions, Abstracts, Proceedings.

American Geological Society, The:
Vol. XIII, 1923. The Geolographical Review.

Geographical Society, The:
Vol. XIII, No. 4, October, 1923, pp. 657–676. Report of a Conference on Cycles.

Institution of Mining and Metallurgy:
The Empire's Base Metal Supplies.

Academy of Natural Sciences of Philadelphia, The:
Annual Report. November 30, 1922, and November 30, 1923.

Field Museum of Natural History:
Annual Report of the Director to Board of Trustees for 1923. Vol. 6, No. 3.

Academy of Natural Sciences of Philadelphia:
Proceedings of. Vol. LXXV, 1923.
Boletin de Museu Nacional do Rio de Janeiro. By Arthur Neiva.

New Zealand, Institute:
Transactions of. Vol. 54, pp. 63–80. The Genus Glycymens in the Tertiary of New Zealand. By J. Marwick, M. A.

Books.

Oil, Paint and Drug Reporter Green Book, 1924.

Maps.

U. S. Geological Survey.
Topographic Sheets:
Camels Hump, Vt.
Capon Bridge, W. Va.-Va.
Herndon, Cal.
Honuapo, Hawaii.
Howard, Pa.
Kalae, Hawaii.
Mendota, Cal.
Pelahatchee, Miss.
Randolph, N. Y.
Reedley, Cal.
Torrance, Cal.
Tyrone, Pa.
Wahtoke, Cal.
San Joaquin, Cal.
Helm, Cal.

Current Magazines on File.

For the convenience of persons wishing to consult the technical magazines in the reading room, a list of those on file is appended:

American Petroleum Institute, New York.
Architect and Engineer, San Francisco.
Arizona Mining Journal, Phoenix, Arizona.
Asbestos, Philadelphia, Pennsylvania.
Brick and Clay Record, Chicago.
Bulletin, Union Oil Co., Los Angeles.
California Journal of Development, San Francisco.
Cement, Mill and Quarry, Chicago, Illinois.
Chemical Engineering and Mining Review, London, England.
Engineering and Mining Journal-Press, New York.
Explosives Engineer, Wilmington, Del.
Financial Insurance News, Los Angeles, California.
Graphite, Jersey City.
Journal of Electricity and Western Industry, San Francisco.
Metallurgical and Chemical Engineering, New York.
Mine and Quarry, Chicago.
Mining and Engineering Record, Vancouver, B. C.
Mining and Oil Bulletin, Los Angeles.
Oil Age, Los Angeles.
Oil and Gas Journal, Tulsa, Oklahoma.
Oil and Gas News, Kansas City.
Oil News, Galesburg, Illinois.
Oildom, New York.
Oil, Paint and Drug Reporter, New York.
Oil Trade Journal, New York.
Oil Weekly, Houston, Texas.
Petroleum Age, New York.
Petroleum Record, Los Angeles.
Petroleum World, Los Angeles.
Queensland Government Mining Journal, Brisbane, Australia.
Rock Products, Chicago, Illinois.
Safety News, Industrial Accident Commission, San Francisco.
Salt Lake Mining Review, Salt Lake City, Utah.
Southwest Builder and Contractor, Los Angeles.
Standard Oil Bulletin, San Francisco.
Stone, New York.
The Record, Associated Oil Company, San Francisco.
Through the Ages, Baltimore.

Newspapers.

The following papers are received and kept on file in the library:

Amador Dispatch, Jackson, Cal.
Arkansas Oil and Mineral News, Hot Springs National Park (Arkansas).
Barstow Printer, Barstow, Cal.
Blythe Herald, Blythe, Cal.
Bridgeport-Chronicle-Union, Bridgeport, Mono Co., Cal.
Calaveras Prospect, San Andreas, Cal.
California Oil World, Los Angeles, Cal.
Cloverdale Reveille, Cloverdale, Cal.
Colusa Daily Sun, Colusa, Cal.
Daily Commercial News, San Francisco, Cal.
Daily Midway Driller, Taft, Cal.
Del Norte Triplicate, Crescent City, Cal.
Exeter Sun, Exeter, Cal.
Gateway Gazette, Beaumont, Cal.
Goldfield News, Goldfield, Nevada.
Guerneville Times, Guerneville, Cal.
Healdsburg Enterprise, Healdsburg, Cal.
Humboldt Standard, Eureka, Cal.

Inyo Independent, Independence, Cal.
Inyo Register, Bishop, Cal.
Ione Valley Echo, Ione, Cal.
Lake County Bee, Lakeport, Cal.
Mining and Financial Record, Denver, Colo.
Mining Topics, Sacramento, Cal., and Unionville, Nev.
Mountain Democrat, Placerville, Cal.
Mountain Messenger, Downieville, Cal.
Nevada Mining Press, Reno, Nevada.
Oatman Mining News, Oatman, Arizona.
Oregon Observer, Grants Pass, Oregon.
Oroville Daily Register, Oroville, Cal.
Petroleum Reporter, Taft, Cal.
Placer Herald, Auburn, Cal.
Plumas Independent, Quincy, Cal.
Plumas National Bulletin, Quincy, Cal.
Randsburg Times, Randsburg, Cal.
San Diego News, San Diego, Cal.
Shasta Courier, Redding, Cal.
Siskiyou News, Yreka, Cal.
Stockton Record, Stockton, Cal.
Tuolumne Prospector, Tuolumne, Cal.
Ventura Daily Post, Ventura, Cal.
Weekly Trinity Journal, Weaverville, Cal.
Western Sentinel, Etna Mills, Cal.

PRODUCERS AND CONSUMERS.

The producer and consumer of mineral products are mutually dependent upon each other for their prosperity, and one of the most direct aids rendered by the Bureau to the mining industry in the past has been that of bringing producers and consumers into direct touch with each other.

This work has been carried on largely by correspondence, supplemented by personal consultation. Lists of buyers of all the commercial minerals produced in California have been made available to producers upon request, and likewise the owners of undeveloped deposits of various minerals, and producers of them, have been made known to those looking for raw mineral products.

When the publication of MINING IN CALIFORNIA was on a monthly basis, current inquiries from buyers and sellers were summarized and lists of mineral products or deposits 'wanted' or 'for sale' included in each issue.

It is important that inquiries of this nature reach the mining public as soon as possible and in order to avoid the delay incident to the present quarterly publication of MINING IN CALIFORNIA, these lists are now issued monthly in the form of a mimeographed sheet under the title of 'Commercial Mineral Notes.'

EMPLOYMENT SERVICE.

Following the establishment of the Mining Division branch offices in 1919, a free technical employment service was offered as a mutual aid to mine operators and technical men for the general benefit of the mineral industry.

Briefly summarized, men desiring positions are registered, the cards containing an outline of the applicant's qualifications, position wanted, salary desired, etc., and as notices of 'positions open' are received, the names and addresses of all applicants deemed qualified are sent to the prospective employer for direct negotiations.

Telephone and telegraphic communications are also given immediate attention.

The Bureau registers technical men, or those qualified for supervisory positions, and vacancies of like nature, only, as no attempt will be made to supply common mine and mill labor.

A list of current applications for positions and 'positions open' is carried in each issue. Notices are designated by a key number, and the name and address corresponding to any number will be supplied upon request, without delay or charge of any kind. If desired, recommendations may be filed with an application, but copies only should be sent to the Bureau, to avoid possible loss. Registration cards for the use of both prospective employers and employees may be obtained at any office of the Bureau upon request, and a cordial invitation is extended to the industry to make free use of the facilities afforded.

POSITIONS WANTED.

21–32 Chemist or petroleum work. One and one-half years' experience. Age 24; single. References. Salary open.

21–33 Solution man. Cyanide Mill. Sixteen years' experience. Age 44; married. References. Salary open.

21–34 Mining or metallurgical work. Five and one-half years' general engineering experience, including assaying and mill work. Age 27; married. References. Salary open.

21–35 Mill construction or superintendent. Cyanide or oil flotation. Thoroughly experienced. Age 47; married. References. Salary open.

21–36 Assaying or helper. Two years' apprenticeship. Age 21; single. References. Salary wanted, $100.

21–37 Petrographic work.

21–38 Shift boss or other supervisory position. Long experience from muck stick to management. Speaks Spanish fluently and can handle American or Mexican labor. Age 41. Salary open.

PUBLICATIONS OF THE CALIFORNIA STATE MINING BUREAU.

During the past forty-four years, in carrying out the provisions of the organic act creating the California State Mining Bureau, there have been published many reports, bulletins and maps which go to make up a library of detailed information on the mineral industry of the state, a large part of which could not be duplicated from any other source.

One feature that has added to the popularity of the publications is that many of them have been distributed without cost to the public, and even the more elaborate ones have been sold at a price which barely covers the cost of printing.

Owing to the fact that funds for the advancing of the work of this department have often been limited, many of the reports and bulletins mentioned were printed in limited editions which are now entirely exhausted.

Copies of such publications are available, however, in the Bureau's offices in the Ferry Building, San Francisco; Pacific Finance Building, Los Angeles; in Santa Maria; Santa Paula; Coalinga; Taft; Bakersfield, and Sacramento. They may also be found in many public, private and technical libraries in California and other states, and foreign countries.

A catalog of all publications of the Bureau, from 1880 to 1917, giving a synopsis of their contents, is issued as Bulletin No. 77.

Publications in stock may be obtained by addressing any of the offices of the State Mining Bureau and enclosing the requisite amount in the case of publications that have a list price. The Bureau is authorized to receive only coin, stamps or money orders, and it will be appreciated if remittance is made in this manner rather than by personal check.

The prices noted include delivery charges to all parts of the United States. Money orders should be made payable to the State Mining Bureau.

REPORTS.

Asterisks (**) indicate the publication is out of print.

	Price
**First Annual Report of the State Mineralogist, 1880, 43 pp. Henry G. Hanks	----
**Second Annual Report of the State Mineralogist, 1882, 514 pp., 4 illustrations, 1 map. Henry G. Hanks	----
**Third Annual Report of the State Mineralogist, 1883, 111 pp., 21 illustrations. Henry G. Hanks	----
**Fourth Annual Report of the State Mineralogist, 1884, 410 pp., 7 illustrations. Henry G. Hanks	----
**Fifth Annual Report of the State Mineralogist, 1885, 234 pp., 15 illustrations, 1 geological map. Henry G. Hanks	----
**Sixth Annual Report of the State Mineralogist, Part I, 1886, 145 pp., 3 illustrations, 1 map. By Henry G. Hanks	----
**Part II, 1887, 222 pp., 36 illustrations. William Irelan, Jr.	----
**Seventh Annual Report of the State Mineralogist, 1887, 315 pp. William Irelan, Jr.	----
**Eighth Annual Report of the State Mineralogist, 1888, 948 pp., 122 illustrations. William Irelan, Jr.	----
**Ninth Annual Report of the State Mineralogist, 1889, 352 pp., 57 illustrations, 2 maps. William Irelan, Jr.	----
**Tenth Annual Report of the State Mineralogist, 1890, 983 pp., 179 illustrations, 10 maps. William Irelan, Jr.	----
Eleventh Report (First Biennial) of the State Mineralogist, for the two years ending September 15, 1892, 612 pp., 73 illustrations, 4 maps. William Irelan, Jr.	$1.00
**Twelfth Report (Second Biennial) of the State Mineralogist, for the two years ending September 15, 1894, 541 pp., 101 illustrations, 5 maps. J. J. Crawford	----
**Thirteenth Report (Third Biennial) of the State Mineralogist, for the two years ending September 15, 1896, 726 pp., 93 illustrations, 1 map. J. J. Crawford	----
Chapters of the State Mineralogist's Report, Biennial Period, 1913–1914, Fletcher Hamilton:	
**Mines and Mineral Resources, Amador, Calaveras and Tuolumne Counties, 172 pp., paper	.
Mines and Mineral Resources, Colusa, Glenn, Lake, Marin, Napa, Solano, Sonoma and Yolo Counties, 208 pp., paper	----
Mines and Mineral Resources, Del Norte, Humboldt, and Mendocino Counties, 59 pp., paper	.50
Mines and Mineral Resources of Imperial and San Diego Counties, 113 pp., paper	.25
**Mines and Mineral Resources, Shasta, Siskiyou and Trinity Counties, 180 pp., paper	.35
**Fourteenth Report of the State Mineralogist, for the Biennial Period 1913–1914, Fletcher Hamilton, 1915:	----
A General Report on the Mines and Mineral Resources of Amador, Calaveras, Tuolumne, Colusa, Glenn, Lake, Marin, Napa, Solano, Sonoma, Yolo, Del Norte, Humboldt, Mendocino, Fresno, Kern, Kings, Madera, Mariposa, Merced, San Joaquin, Stanislaus, San Diego, Imperial, Shasta, Siskiyou, and Trinity Counties, 974 pp., 275 illustrations, cloth	----
Chapters of the State Mineralogist's Report, Biennial Period, 1915–1916, Fletcher Hamilton:	
Mines and Mineral Resources, Alpine, Inyo and Mono Counties, 176 pp., paper	.65
Same, including geological map of Inyo County	1.25
Mines and Mineral Resources, Butte, Lassen, Modoc, Sutter, and Tehama Counties, 91 pp., paper	.50
Mines and Mineral Resources, El Dorado, Placer, Sacramento, and Yuba Counties, 198 pp., paper	.65
Mines and Mineral Resources, Los Angeles, Orange, and Riverside Counties, 136 pp., paper	.50

REPORTS—Continued.

Asterisks (**) indicate the publication is out of print.

	Price
Mines and Mineral Resources, Monterey, San Benito, San Luis Obispo, Santa Barbara, and Ventura Counties, 183 pp., paper	$0.65
Mines and Mineral Resources, San Bernardino and Tulare Counties, 186 pp., paper	.65
Fifteenth Report of the State Mineralogist, for the Biennial Period 1915–1916, Fletcher Hamilton, 1917:	
A general Report on the Mines and Mineral Resources of Alpine, Inyo, Mono, Butte, Lassen, Modoc, Sutter, Tehama, Placer, Sacramento, Yuba, Los Angeles, Orange, Riverside, San Benito, San Luis Obispo, Santa Barbara, Ventura, San Bernardino and Tulare Counties, 990 pp., 413 illustrations, cloth	3.75
Chapters of the State Mineralogist's Report, Biennial Period 1917–1918, Fletcher Hamilton:	
Mines and Mineral Resources of Nevada County, 270 pp., paper	.75
Mines and Mineral Resources of Plumas County, 188 pp., paper	.50
Mines and Mineral Resources of Sierra County, 144 pp., paper	.50
Seventeenth Report of the State Mineralogist, 1920, Mining in California During 1920, Fletcher Hamilton; 562 pp., 71 illustrations, cloth	1.75
Eighteenth Report of the State Mineralogist, 1922, Mining in California, Fletcher Hamilton. Chapters published monthly beginning with January, 1922:	
**January, **February, March, April, May, June, July, August, September, October, November, December, 1922	Free
Nineteenth Report of the State Mineralogist, 1923, Mining in California, Fletcher Hamilton; Lloyd L. Root. Chapters published monthly January to March, 1923, quarterly beginning with September, 1923. January, February, March, September, 1923	Free
Twentieth Report of the State Mineralogist, Mining in California. Lloyd L. Root. Chapters published quarterly. January, April, July, 1924, each	.25
Chapters of State Oil and Gas Supervisor's Report:	
Summary of Operations—California Oil Fields, July, 1918, to March, 1919 (one volume)	Free
Summary of Operations—California Oil Fields. Published monthly, beginning April, 1919:	
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January, February, March, 1924	Free

BULLETINS.

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**Bulletin No. 2. Methods of Mine Timbering, by W. H. Storms. 1894, 58 pp., 75 illustrations	----
**Bulletin No. 3. Gas and Petroleum Yielding Formations of Central Valley of California, by W. L. Watts. 1894, 100 pp., 13 illustrations, 4 maps	----
**Bulletin No. 4. Catalogue of Californian Fossils, by J. G. Cooper, 1894, 73 pp., 67 illustrations. (Part I was published in the Seventh Annual Report of the State Mineralogist, 1887.)	----
**Bulletin No. 5. The Cyanide Process, 1894, by Dr. A. Scheidel. 140 pp., 46 illustrations	----
Bulletin No. 6. California Gold Mill Practices, 1895, by E. B. Preston, 85 pp., 46 illustrations	.50

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**Bulletin No. 7. Mineral Production of California, by Counties for the year 1894, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 8. Mineral Production of California, by Counties for the year 1895, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 9. Mine Drainage, Pumps, etc., by Hans C. Behr. 1896, 210 pp., 206 illustrations	----
**Bulletin No. 10. A bibliography Relating to the Geology, Palæntology and Mineral Resources of California, by Anthony W. Vogdes. 1896, 121 pp.	----
**Bulletin No. 11. Oil and Gas Yielding Formations of Los Angeles, Ventura and Santa Barbara counties, by W. L. Watts. 1897, 94 pp., 6 maps, 31 illustrations	----
**Bulletin No. 12. Mineral Production of California, by Counties for 1896, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 13. Mineral Production of California, by Counties for 1897, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 14. Mineral Production of California, by Counties for 1898, by Charles G. Yale	----
**Bulletin No. 15. Map of Oil City Fields, Fresno County, by John H. Means. 1899	----
**Bulletin No. 16. The Genesis of Petroleum and Asphaltum in California, by A. S. Cooper. 1899, 39 pp., 29 illustrations	----
**Bulletin No. 17. Mineral Production of California, by Counties for 1899, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 18. Mother Lode Region of California, by W. H. Storms. 1900, 154 pp., 49 illustrations	----
**Bulletin No. 19. Oil and Gas Yielding Formations of California, by W. L. Watts. 1900, 236 pp., 60 illustrations, 8 maps	----
**Bulletin No. 20. Synopsis of General Report of State Mining Bureau, by W. L. Watts. 1901, 21 pp. This bulletin contains a brief statement of the progress of the mineral industry in California for the four years ending December, 1899	----
**Bulletin No. 21. Mineral Production of California by Counties, by Charles G. Yale. 1900. Tabulated sheet	----
**Bulletin No. 22. Mineral Production of California for Fourteen Years, by Charles G. Yale. 1900. Tabulated sheet	----
Bulletin No. 23. The Copper Resources of California, by P. C. DuBois, F. M. Anderson, J. H. Tibbits and G. A. Tweedy. 1902, 282 pp., 69 illustrations, and 9 maps	$0.50
**Bulletin No. 24. The Saline Deposits of California, by G. E. Bailey. 1902, 216 pp., 99 illustrations, 5 maps	----
**Bulletin No. 25. Mineral Production of California, by Counties, for 1901, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 26. Mineral Production of California for the past Fifteen Years, by Charles G. Yale. 1902. Tabulated sheet	----
**Bulletin No. 27. The Quicksilver Resources of California, by William Forstner. 1903, 273 pp., 144 illustrations, 8 maps	----
**Bulletin No. 28. Mineral Production of California, for 1902, by Charles G. Yale. Tabulated sheet	----
**Bulletin No. 29. Mineral Production of California for Sixteen Years, by Charles G. Yale. 1903. Tabulated sheet	----
**Bulletin No. 30. Bibliography Relating to the Geology, Palæntology, and Mineral Resources of California, by A. W. Vogdes. 1903, 290 pp.	----
**Bulletin No. 31. Chemical Analyses of California Petroleum, by H. N. Cooper. 1904. Tabulated sheet	----
**Bulletin No. 32. Production and Use of Petroleum in California, by Paul W. Prutzman. 1904, 230 pp., 116 illustrations, 14 maps	----
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**Bulletin No. 34. Mineral Production of California for Seventeen Years, by Charles G. Yale. 1904. Tabulated sheet	----
**Bulletin No. 35. Mines and Minerals of California, by Charles G. Yale. 1904, 55 pp., 20 county maps. Relief map of California	----

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**Bulletin No. 54. Mineral Production of California, by Counties, by D. H. Walker, 1908. Tabulated sheet	----
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**Bulletin No. 56. Mineral Production for 1908, with County Maps and Mining Laws of California, by D. H. Walker. 78 pp.	----
**Bulletin No. 57. Gold Dredging in California, by W. B. Winston and Chas. Janin. 1910, 312 pp., 239 illustrations and 10 maps	----
**Bulletin No. 58. Mineral Production of California, by Counties, by D. H. Walker, 1909. Tabulated sheet	----
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**Bulletin No. 60. Mineral Production for 1909, County Maps and Mining Laws of California, by D. H. Walker. 94 pp.	----
**Bulletin No. 61. Mineral Production of California, by Counties for 1910, by D. H. Walker. Tabulated sheet	----
**Bulletin No. 62. Mineral Production of California for Twenty-four Years, by D. H. Walker, 1910. Tabulated sheet	----
**Bulletin No. 63. Petroleum in Southern California, by P. W. Prutzman. 1912, 430 pp., 41 illustrations, 6 maps	----
**Bulletin No. 64. Mineral Production for 1911, by E. S. Boalich. 49 pp.	----
**Bulletin No. 65. Mineral Production for 1912, by E. S. Boalich. 64 pp.	----
**Bulletin No. 66. Mining Laws of the United States and California. 1914, 89 pp.	----

BULLETINS—Continued.

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**Bulletin No. 68. Mineral Production for 1913, with County Maps and Mining Laws, by E. S. Boalich. 160 pp.	----
**Bulletin No. 69. Petroleum Industry of California, with Folio of Maps (18 by 22), by R. P. McLaughlin and C. A. Waring. 1914, 519 pp., 13 illustrations, 83 figs. [18 plates in accompanying folio.]	----
**Bulletin No. 70. Mineral Production for 1914, with County Maps and Mining Laws. 184 pp.	----
**Bulletin No. 71. Mineral Production for 1915, with County Maps and Mining Laws, by Walter W. Bradley. 193 pp., 4 illustrations	----
Bulletin No. 72. The Geologic Formations of California, by James Perrin Smith. 1916, 47 pp.	$0.25
Reconnaissance Geologic Map (of which, Bulletin 72 is explanatory), in 23 colors. Scale: 1 inch equals 12 miles. Mounted	2.50
**Bulletin No. 73. First Annual Report of the State Oil and Gas Supervisor of California, for the fiscal year 1915–16, by R. P. McLaughlin. 278 pp., 26 illustrations	----
Bulletin No. 74. Mineral Production of California in 1916, with County Maps, by Walter W. Bradley. 179 pp., 12 illustrations	Free
**Bulletin No. 75. United States and California Mining Laws, 1917. 115 pp., paper	----
Bulletin No. 76. Manganese and Chromium in California, by Walter W. Bradley, Emile Huguenin, C. A. Logan, W. B. Tucker and C. A. Waring, 1918. 248 pp., 51 illustrations, 5 maps, paper	.50
Bulletin No. 77. Catalogue of Publications of California State Mining Bureau, 1880–1917, by E. S. Boalich. 44 pp., paper	Free
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**Bulletin No. 82. Second Annual Report of the State Oil and Gas Supervisor, for the fiscal year 1916–1917, by R. P. McLaughlin, 1918. 412 pp., 31 illustrations, cloth	----
Bulletin No. 83. California Mineral Production for 1917, with County Maps, by Walter W. Bradley. 179 pp., paper	Free
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Bulletin No. 92. Gold Placers of California, by Charles S. Haley, 1923. 167 pp., cloth	1.50
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PRELIMINARY REPORTS.

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**Preliminary Report No. 1. Notes on Damage by Water in California Oil Fields, December, 1913. By R. P. McLaughlin. 4 pp.	----
**Preliminary Report No. 2. Notes on Damage by Water in California Oil Fields, March, 1914. By R. P. McLaughlin. 4 pp.	----
**Preliminary Report No. 3. Manganese and Chromium, 1917. By E. S. Boalich. 32 pp.	----
Preliminary Report No. 4. Tungsten, Molybdenum and Vanadium. By E. S. Boalich and W. O. Castello, 1918. 34 pp. Paper	Free
Preliminary Report No. 5. Antimony, Graphite, Nickel, Potash, Strontium and Tin. By E. S. Boalich and W. O. Castello, 1918. 44 pp. Paper	Free
Preliminary Report No. 6. A Review of Mining in California During 1919. Fletcher Hamilton, 1920. 43 pp. Paper	Free
**Preliminary Report No. 7. The Clay Industry in California. By E. S. Boalich, W. O. Castello, E. Huguenin, C. A. Logan, and W. B. Tucker, 1920. 102 pp. 24 illustrations. Paper	----
**Preliminary Report No. 8. A Review of Mining in California During 1921, with Notes on the Outlook for 1922. Fletcher Hamilton, 1922. 68 pp. Paper	----

MISCELLANEOUS PUBLICATIONS.

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**First Annual Catalogue of the State Museum of California, being the collection made by the State Mining Bureau during the year ending April 16, 1881. 350 pp.	----
**Catalogue of books, maps, lithographs, photographs, etc., in the library of the State Mining Bureau at San Francisco, May 15, 1884. 19 pp.	----
**Catalogue of the State Museum of California, Volume II, being the collection made by the State Mining Bureau from April 16, 1881, to May 5, 1884. 220 pp.	----
**Catalogue of the State Museum of California, Volume III, being the collection made by the State Mining Bureau from May 15, 1884, to March 31, 1887. 195 pp.	----
**Catalogue of the State Museum of California, Volume IV, being the collection made by the State Mining Bureau from March 30, 1887, to August 20, 1890. 261 pp.	----
**Catalogue of the Library of the California State Mining Bureau, September 1, 1892. 149 pp.	----
**Catalogue of West North American and Many Foreign Shells with Their Geographical Ranges, by J. G. Cooper. Printed for the State Mining Bureau, April, 1894	----
**Report of the Board of Trustees for the four years ending September, 1900. 15 pp. Paper	----
Bulletin. Reconnaissance of the Colorado Desert Mining District. By Stephen Bowers, 1901. 19 pp. 2 illustrations. Paper	Free
Commercial Mineral Notes. A monthly mimeographed sheet. April, May, June, July, August, September, October, November, December, 1923	Free
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MAPS.

Registers of Mines With Maps.

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Register of Mines, with Map, Butte County	.25
**Register of Mines, with Map, Calaveras County	----
**Register of Mines, with Map, El Dorado County	----
**Register of Mines, with Map, Inyo County	----
**Register of Mines, with Map, Kern County	----
**Register of Mines, with Map, Lake County	----
**Register of Mines, with Map, Mariposa County	----
**Register of Mines, with Map, Nevada County	----
**Register of Mines, with Map, Placer County	----
**Register of Mines, with Map, Plumas County	----
**Register of Mines, with Map, San Bernardino County	----
**Register of Mines, with Map, San Diego County	----
Register of Mines, with Map, Santa Barbara County	.25
**Register of Mines, with Map, Shasta County	----
**Register of Mines, with Map, Sierra County	----
**Register of Mines, with Map, Siskiyou County	----
**Register of Mines, with Map, Trinity County	----
**Register of Mines, with Map, Tuolumne County	----
**Register of Mines, with Map, Yuba County	----
Register of Oil Wells, with Map, Los Angeles City	----

OTHER MAPS.

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Map of California, Showing Mineral Deposits (50 x 60 in.)—	
**Mounted	----
**Unmounted	----
Map of Forest Reserves in California—	
Mounted	.50
**Unmounted	----
**Mineral and Relief Map of California	----
**Map of El Dorado County, Showing Boundaries, National Forests	----
**Map of Madera County, Showing Boundaries, National Forests	----
**Map of Placer County, Showing Boundaries, National Forests	----
**Map of Shasta County, Showing Boundaries, National Forests	----
**Map of Sierra County, Showing Boundaries, National Forests	----
**Map of Siskiyou County, Showing Boundaries, National Forests	----
**Map of Tuolumne County, Showing Boundaries, National Forests	----
**Map of Mother Lode Region	----
**Map of Desert Region of Southern California	----
Map of Minaret District, Madera County	.20
Map of Copper Deposits in California	.05
**Map of Calaveras County	----
Map of Plumas County	.25
**Map of Trinity County	----
Map of Tuolumne County	.25
Geological Map of Inyo County. Scale 1 inch equals 4 miles	.60
Map of California accompanying Bulletin No. 89, showing generalized classification of land with regard to oil possibilities. Map only, without Bulletin	.25
Geological Map of California, 1916. Scale 1 inch equals 12 miles. As accurate and up-to-date as available data will permit as regards topography and geography. Shows railroads, highways, post offices and other towns. First geological map that has been available since 1892, and shows geology of entire state as no other map does. Geological details lithographed in 23 colors. Mounted	2.50
Map accompanying Bulletin 92, Gold Placers of California. Map only, without Bulletin	.50

OIL FIELD MAPS.

These maps are revised from time to time as development work advances and ownerships change.

	Price
Map No. 1—Sargent, Santa Clara County	$0.50
Map No. 2—Santa Maria, including Cat Canyon and Los Alamos	.75
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Map No. 11—Lost Hills and North Belridge, Kern County	.75
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Map No. 14—Coalinga, Fresno County	.75
Map No. 15—Elk Hills, Kern County	.75
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Map No. 17—Santa Paula-Sespe Oil Fields, Ventura County	.75
Map No. 18—Piru-Simi-Newhall Oil Fields	.75
Map No. 19—Arroyo Grande, San Luis Obispo County	.75
Map No. 20—Long Beach Oil Field	1.00
Map No. 21—Portion of District 4, Showing Boundaries of Oil Fields, Kern and Kings counties	.75
Map No. 22—Portion of District 3, Showing Oil Fields, Santa Barbara County	.75
Map No. 23—Portion of District 2, Showing Boundaries of Oil Fields, Ventura County	.75
Map No. 24—Portion of District 1, Showing Boundaries of Oil Fields, Los Angeles and Orange counties	.75
Map No. 26—Huntington Beach Oil Field	.75
Map No. 27—Santa Fe Springs Oil Field	.75
Map No. 28—Torrance, Los Angeles County	.75

DETERMINATION OF MINERAL SAMPLES.

Samples (limited to three at one time) of any mineral found in the state may be sent to the Bureau for identification, and the same will be classified free of charge. No samples will be determined if received from points outside the state. It must be understood that no assays, or quantitative determinations will be made. Samples should be in lump form if possible, and marked plainly with name of sender on outside of package, etc. No samples will be received unless delivery charges are prepaid. A letter should accompany sample, giving locality where mineral was found and the nature of the information desired.

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THE STATE MINING BUREAU

CORDIALLY INVITES YOU TO VISIT
ITS VARIOUS DEPARTMENTS MAINTAINED
FOR THE PURPOSE OF FURTHERING
THE DEVELOPMENT OF THE

MINERAL RESOURCES OF CALIFORNIA

At the service of the public are the scientific reference library and reading room, the general information bureau, the laboratory for the free determination of mineral samples found in the state, and the largest museum of mineral specimens on the Pacific Coast. The time and attention of the State Mineralogist, as well as that of his technical staff, is also at your disposal.

Office hours: 9 a.m. to 5 p.m. daily.
Saturday, 9 a.m. to 12 m.

LLOYD L. ROOT,
State Mineralogist.

Third floor, Ferry Building, San Francisco, Cal.
Branch Offices: Pacific Finance Building, Los Angeles; Sacramento, Bakersfield, Taft, Coalinga, Santa Maria, and Santa Paula.

Annual Report

1923

Board of Medical Examiners

OF THE

State of California

CHARLES B. PINKHAM, M.D.
Secretary-Treasurer

CALIFORNIA STATE PRINTING OFFICE
FRANK J. SMITH, *Superintendent*
SACRAMENTO, 1924

30828

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LETTER OF TRANSMITTAL.

Sacramento, California, January 2, 1924.

Hon. Friend W. Richardson,
Governor of the State of California,
Sacramento, California.

Your Excellency: Conforming with the provisions of section 2 of the Medical Practice Act of the State of California, Charles B. Pinkham, M. D., Secretary-Treasurer of the Board of Medical Examiners, has the honor of respectfully presenting for your consideration the annual report showing the activities of this branch of the state government.

The personnel of the Board has been enhanced by the appointment of Junius B. Harris, M. D., to succeed Cyrus J. Gaddis, D. O., term expired.

Attorney Adolphus Bianchi of San Francisco was appointed chief counsel on October 15, 1923, vice Harry A. Encell, resigned, effective July 1, 1923.

Former Associate Counsel Leo Rosecrans of Los Angeles also severed his connection with the Board by resignation effective June 20, 1923.

REPORT OF BOARD OF MEDICAL EXAMINERS, FOR THE YEAR 1923.

MEETINGS.

During the year just closed, the Board of Medical Examiners held three regular meetings and two special meetings. Oral examination of reciprocity applicants were held at each meeting, while four written examinations were held, *i.e.*, February and June in Los Angeles, July in San Francisco and October in Sacramento.

Between written examinations, oral examinations, legal hearings and routine business, the Board members have a most busy four days' session at each regular meeting.

APPLICATIONS.

California medical teaching institutions continue to graduate a goodly number of well educated doctors of medicine. These applicants for a written examination for a Physician's and Surgeon's certificate, are augmented by a large number of practitioners of medicine from other states that seek the allurements of residence in our glorious state.

The number of applications filed in 1923 compares favorably with those filed in 1922 despite the creation of the Osteopathic and Chiropractic Boards, having jurisdiction over the graduates of colleges granting osteopathic or chiropractic degrees.

	Class of Applicant	*Filed 1921*	*Filed 1922*	*Filed 1923*
A.	Physician and surgeon, written	187	199	206
D.	Physician and surgeon, government credentials	14	37	26
AB.	Physician and surgeon, oral, section 12½	9	6	0
BB.	Drugless practitioner, written	16	83	0
	Osteopathic	22	0	0
	Chiropractic	61	83	19
C.	Reciprocity, physician and surgeon	447	442	632
CB.	Osteopathic, reciprocity	17	20	0
CBB.	Drugless, reciprocity	10	14	0
CE.	Chiropodist, reciprocity	0	1	3
E.	Chiropodist, written	20	1	13
F.	Midwife, written	7	28	11
		727	831	910

The above table discloses: 1. That the Medical Practice Act requires the Board to conduct written examinations for physicians and surgeons, for drugless practitioners, for chiropodists and for midwives.

2. That provision is made for licensing those presenting satisfactory credentials showing commission in the U. S. A., U. S. N. or U. S. P. H. Service.

3. That applications for certificates to practice in California may be filed on credentials from other states (reciprocity) by physicians and surgeons, drugless practitioners, chiropodists and midwives.

The Osteopathic Act passed at the November, 1922, election takes from the Board of Medical Examiners all jurisdiction over graduates of osteopathic schools. After midnight of December 21, 1922, all jurisdiction passed to the Board of Osteopathic Examiners, hence the Board of Medical Examiners can not receive applications from graduates of osteopathic schools. The chiropractic initiative in effect the same date requires graduates from chiropractic schools or colleges to file application with the Board of Chiropractic Examiners created thereunder and not with the Board of Medical Examiners.

CERTIFICATES ISSUED.

The total number of certificates issued during 1923 compares favorably with those issued in 1921 and 1922 as disclosed by the following table:

CERTIFICATES ISSUED IN 1921, 1922 AND 1923.

	Class of Applicant	*1921*	*1922*	*1923*
A.	Physician and Surgeon:			
	(a) Written examination	174	197	183
	(b) Government credentials	11	26	18
AB.	Physician and surgeon, section 12½	13	0	0
C.	Reciprocity—Physician and Surgeon:			
	(a) Direct	294	322	404
	(b) Oral	95	85	86
BB.	Drugless, written	23	43	3
CB.	Reciprocity, osteopathic	13	24	0
CBB.	Reciprocity, drugless	11	12	0
E.	Chiropody, written	19	1	13
CE.	Reciprocity, chiropody	0	1	2
F.	Midwife	3	14	4
	Total	656	747	713

EXAMINATION STATISTICS FOR 1923.

Physicians and Surgeons—California schools.	*Passed*	*Failed*	*Percentages Passed*	*Percentages Failed*
University of California Medical School	38	0	100.0	0
Stanford University Medical School	20	0	100.0	0
*College of Physicians and Surgeons, Medical Department, University of Southern California	0	4	0	100.0
College of Medical Evangelists	35	0	100.0	0
Cooper Medical College	1	0	100.0	0
Extra state schools	88	23	79.2	20.7
Totals	182	27	87.0	12.9

*Closed 1920. Undergraduate unfinished education completed in another school but diploma of parent school issued.

Drugless—California schools	*Passed*	*Failed*	*Percentages Passed*	*Percentages Failed*
California College of Chiropractic	0	3	0	100.0
Eclectic College of Chiropractic	0	1	0	100.0
Kinetic Drugless College	0	3	0	100.0
Los Angeles College of Chiropractic	0	1	0	100.0
Western College of Chiropractic	13	14	48.0	51.0
Extra state schools	0	1	0	100.0
Totals	13	23	36.1	63.0
Chiropody.				
California College of Chiropody, San Francisco	10	0	100.0	0
Extra state schools	3	0	100.0	0
Totals	13	0	100.0	0
Midwives				
Extra state schools	3	10	23.0	76.0

Reciprocity.

The operation of chiropractic and osteopathic initiatives has in no way lessened the income of the Board by decreasing the annual number of reciprocity applications filed or certificates issued, as may be seen by the following table:

COMPARISON OF APPLICATIONS FILED FOR RECIPROCITY CERTIFICATES WITH THE NUMBER OF CERTIFICATES ISSUED.

	Applications filed			*Certificates issued*		
	1921	*1922*	*1923*	*1921*	*1922*	*1923*
Physician and surgeon (C)	447	442	602	389	407	490
Osteopathic (CB)	17	20	0	13	24	0
Drugless (CBB)	10	14	0	11	12	0
Chiropody (CE)	0	1	3	0	1	2
Total reciprocity certificates	474	477	605	413	454	492

The following tabulation by states showing the reciprocity certificates issued by the California Board to individuals licensed by other state examining boards manifests that the majority have been issued to applicants from those states that show the largest registration of practitioners of the healing art:

Alabama	6	Hawaii	3
Alaska	0	Idaho	12
Arizona	7	Illinois	77
Arkansas	1	Indiana	20
Colorado	10	Iowa	27
Connecticut	2	Kansas	19
Delaware	0	Kentucky	6
District of Columbia	1	Louisiana	8
Florida	1	Maine	1
Georgia	4	Maryland	8
Massachusetts	8	Pennsylvania	28
Michigan	6	Rhode Island	2
Minnesota	14	South Carolina	1
Mississippi	2	South Dakota	8
Missouri	17	Tennessee	6
Montana	19	Texas	14
Nebraska	30	Utah	7
Nevada	3	Vermont	2
New Hampshire	3	Virginia	1
New Jersey	1	Washington	22
New Mexico	1	West Virginia	3
New York	27	Wisconsin	10
North Dakota	10	Wyoming	1
Ohio	15		
Oklahoma	6	Total	492
Oregon	12		

But few licentiates of the Board of Medical Examiners of California have sought registration in other states during 1923 as will be seen by the following group of California practitioners listed with the name of the state where registration was sought and the date indorsed.

Arizona—
Cox, Edward R., M. D., June 14, 1923.

District of Columbia—
Scoles, Hudspeth E., M. D., August 9, 1923.

Georgia—
Schneider, Julius F., October 10, 1923.

Iowa—
Yates, Walter S., January 4, 1923.

Kansas—
Matthews, Adelbert C., January 18, 1923.

Kentucky—
Balkins, Almon J., October 31, 1923.

Maryland—
Scoles, Hudspeth E., August 9, 1923.
Truman, A. W., April 25, 1923.

Michigan—
Ahlem, Judith, September 16, 1923.
Potts, Enos A., April 25, 1923.

Minnesota—
Crane, Wm. Whitfield, July 19, 1923.
Delamere, Granville, April 5, 1923.
Matthews, Adelbert C., January 18, 1923.
Mentzer, Stanley H., September 20, 1923.

Nevada—
Abbott, Geo. K., December 5, 1923.
Biorkman, Gustav, April 18, 1923.
del Castillo, A. L., April 5, 1923.
Folte, Arno, March 28, 1923.
Jordan, Wm. H. (Chiropractor), Aug. 9, 1923.
Magee, Geo. R., October 19, 1923.

New York—
Cosgrave, Millicent Mary, March 12, 1923.
Greenberg, Ermina, May 19, 1923.
Milnick, Louis J., March 3, 1923.
Murray, Virginia, January 18, 1923.
Peters, Lulu Hunt, April 12, 1923.
Roncoviere, Alfred, March 3, 1923.
Sink, Wm. Dean, October 10, 1923.

Ohio—
Bowman, Robert J., October 10, 1923.
Jones, Gertrude F., December 27, 1923.

Oregon—
Dixon, Robert J., May 24, 1923.
Rea, Bernard J., April 18, 1923.
Trout, Frank M., September 6, 1923.

South Dakota—
Kellogg, Ernest C., June 14, 1923.
Sorensen, Edwin C., October 31, 1923.

Texas—
Farnsworth, David C., August 9, 1923.

Utah—
McQuarrie, John G., September 20, 1923.

Washington—
Allen, Robert E., April 18, 1923.
Palmer, May McKinney, September 20, 1923.
Thomas, William L., June 7, 1923.

West Virginia—
Bailey, John H., October 31, 1923.

Wisconsin—
Buerki, Robert C., October 7, 1923.

HEARINGS.

At each regular meeting, the Board has conducted hearings of complaints filed against those licensed under the Medical Practice Act of this state who have been charged of violation of the provisions of section 14 thereof. These complaints are classified as follows:

1. Narcotic violations	10
2. Abortions	5
3. Habitual intemperance	1
4. Miscellaneous	6
Total	22

Decisions of the Board following the hearings of these complaints show as follows:

Guilty (revoked)	3
Guilty (probation)	7
Guilty (not penalized)	3
Cases continued	7
Dismissed	2
Total	22

Name	February meeting	July meeting	October meeting
Adams, Charles B., M. D. (1)	Guilty—probation 1 year		
Bell, David R., M. D. (1)	Guilty—penalty deferred		
Caesar, Wm. J., M. D. (4)	Continued to July	Continued to October	Dismissed.
Charles, Harvey, M. D. (1)		Guilty—5 years probation	
Deacon, George, M. D. (1)	Guilty—penalty deferred		
Dietsch, Curt O., M. D. (2)	Continued to July	Continued to Feb., 1924	
Dutcher, Willis, M. D. (1)			Continued to Feb., 1924.
Elliott, Charles R., M. D. (3)		Continued to October	Revoked.
Grisso, Davis, M. D. (4)	Continued to July	Continued to October	Revoked—writ of review pending.
Hadley, Fred H., M. D. (4)		Guilty—probation; Superior Court reversed Board	
Haigh, Frederick, M. D. (2)			Continued to Feb , 1924.
Haruki, Rinhei, M. D. (4)		Continued to October	Guilty—probation 1 year.
Holsman, Charles K., M. D. (4)	Continued to July	Continued to October	Continued to Feb., 1924.
Hummel, Heinz Geo., M. D. (2)			Continued to Feb., 1924
Jolley, John E., D. C. (4)	Revoked		
Kvello, Olaf A., M. D. (1)	Continued to July	Guilty—probation 5 years	
McDannell, Wm. R., M. D. (1)	Probation 5 years		
Meredith, Charles H., M. D (1)		Continued to Feb., 1924	Continued to Feb., 1924.
Mueller, Otto H., M. D. (1)		Guilty—5 years probation	
Mutchmor, John T., M. D. (2)			Dismissed
Stone, Augusta, M. D. (2)			Continued to Feb., 1924.
Wright, T. B., M. D. (1)	Guilty—penalty deferred		

Petitions for restoration of certificates heretofore revoked have been filed and action taken as follows:

Card, Wm. S., M. D., revoked February 18, 1919, denied.
Marsh, Charles E., Naturopath, revoked February 15, 1922, denied.
Sanders, Alfred T. A., M. D., revoked March 20, 1919, restored July 11, 1923.

DIPLOMA MILLS AND FRAUDULENT STATE LICENSES.

Nation wide interest has recently been aroused through disclosures of the credential and "diploma mills" in Missouri, grossly exaggerated statements having been made that there are approximately 15,000 physicians practicing in the United States on fraudulent credentials. The Council of Education of the American Medical Association, which keeps a card index of all students as well as graduates of medical colleges in this country, positively states there cannot possibly be anywhere near such a number of fraudulent medical diplomas in use in the entire United States. (Journal American Medical Association, December 22, 1923, page 2120.)

The medical schools mentioned in the St. Louis *Star's* diploma expose are all located in the State of Missouri and are four in number, namely:

1. *The National University of Arts and Sciences, Medical Department*, which is reported as having come into existence in 1912 through the absorption of the "American Medical College." In 1915 the "St. Louis College of Medicine and Surgery," also joined the Medical Department of the National University of Arts and Sciences. The Medical Department of the National University of Arts and Sciences ceased existence in 1918.

2. The St. Louis College of Physicians and Surgeons organized 1869, suspended 1873. Reorganized 1879 and in 1915 merged with the Medical Department of the National University of Arts and Sciences. The institution was re-established in 1916 and has since continued. Dean Waldo Briggs, M. D. Graduates reported as not recognized by the licensing Board of its home state Missouri, and the forty-six other states.

3. The Kansas City College of Medicine and Surgery was organized in 1915 as an off shoot of the Eclectic Medical University, and although claiming to be an eclectic institution, is reported not recognized by the National Eclectic Association as well as the licensing board of its home state Missouri, and the licensing Boards of forty-two other states, including California. Dean D. R. Alexander, M. D., is reported as one of the principals in diploma ring scandal.

In October, 1923, it was reported throughout the United States that a "clique" consisting of Robert Adcox, M. D., D. R. Alexander, M. D., Ralph A. Voigt, M. D. and Professor W. P. Sachs for some time has been reporting as operating in Missouri as a "clearing house" for the sale of fraudulent high school credentials, university degree and medical diplomas.

For several years modern educational standards have demanded that prospective medical students must have documentary evidence of a high school or higher education in order to enter medical college. It is reported that credentials of this nature have been purchasable from Professor W. P. Sachs, former dean of the National University of Arts and Sciences, and for many years state examiner for public schools in Missouri, whose alleged confession was printed in the St. Louis *Star* of October 19, 1923, wherein he relates that during the past ten years he

had dealt in fraudulent high school certificates, college credits, degree Bachelor of Science and medical diplomas; that, while serving as state examiner of Missouri he had printed some 2500 high school certificates "for future use," disposing of about 1000 to 1500 at $5.00 each.

The St. Louis *Star* of October 23, 1923, prints a similar confession made by B. H. Jolley, Superintendent of Public Schools, St. Charles County, Missouri, who relates, as a part of the diploma ring operation in Missouri, the fraudulent issue of high school credentials at $10.00, estimating that he had sold about 57 of these official documents to Dr. Adcox during the past year.

It is believed that Professor Sachs and B. H. Jolley are not the only individuals who have issued fraudulent preliminary education certificates so essential for matriculation in medical colleges and it is quite possible that some medical colleges of good repute have been imposed upon in accepting similar fraudulent preliminary education certificates. The so-called "diploma mill" operators offer the greatest market for purchase and sale of these preliminary education certificates as a part of their scheme to turn out "half baked" doctors of medicine with little, if any, professional training.

A State Board of Medical Examiners that is painstaking in its examination of an applicant's credentials, soon learns that there are different classes of undesirable diplomas, namely:

1. Diplomas from reputable schools that through theft or otherwise, have come into possession of unscrupulous individuals who change their name to conform with that engrossed on the diploma. Such a case was uncovered by the Colorado Board in Charles Fox (Ill. State Reformatory No. 2865), alias A. Edward Ryetzel, who posed as Dr. Geo. A. Elliott, having stolen the credentials of the original Geo. A. Elliott, M. D., University of Toronto, 1896. Fox later erased the name "Elliott" from the diploma, wrote in Geo. E. Cooke, assumed that name and was so licensed in Illinois. Some two years ago it was related that an individual known in California for several years as Galen R. Hickok (now serving time in San Quentin Prison), was suspected as having some years ago surreptitiously come into possession of medical diploma of the genuine Galen R. Hickok granted by the St. Louis College of Physicians and Surgeons and dated April 26, 1899. It is said that the individual long known as Hickok had assumed the name Galen R. Hickok engrossed on said diploma; that on the basis of this diploma he obtained a Nevada license to practice medicine and surgery and was later licensed as a Naturopath in this state by Special Act of California Legislature in 1909. In a letter commenting on the committment of the California Galen R. Hickok to San Quentin Prison, the original Galen R. Hickok, M. D., Santante, Kansas, stated, "By the way, I recently received my old diploma—it was sent me by the man who stole it. I presume we are rid of him now, for a while at least."

2. In the second group are listed diplomas from reputable schools that have been stolen or otherwise come into possession of unscrupulous individuals who erase the original name and insert another. This fraud is disclosed not only by careful scrutiny of each diploma filed but as well by either requiring on the application blank the indorsement of the medical college as to the authenticity of said diploma or by requiring a

certified copy of the applicant's registration record from another state wherein will appear the name of the individual applicant, name of Medical School that granted him his medical degree and date of same.

3. In the third group we place the diplomas of reputable medical schools that have some way fallen into the hands of the unscrupulous "diploma brokers"[1] who sell to the highest bidder. The Bulletin of the Federation of Medical Examining Boards, April and May, 1916, relates how diplomas of Marquette University Medical School[2] have fallen into the hands of diploma merchants then said to be conducting a "medical course" in Chicago. It is related that Marquette Medical College is not the only reputable institution whose diplomas, signed in blank, have been fraudulently disposed of by unscrupulous individuals.

4. In the fourth group are placed those diplomas from a reputable medical college earned by one who for hire, enters a medical college under the name of his employer, earns the diploma which is issued in the name of his employer and later delivered to him. Such was the case of Sidney H. Knowles, who matriculated and graduated some years ago from the University of New York under the name of A. H. Warren. Knowles thereafter delivered the diploma to Warren who paid all costs. It is evident that Warren who had not attended medical college, could not pass a State Board examination unless the Board operated by fraud as is reported does the Eclectic Board of Medical Examiners of Connecticut, where, according to reports, the examination questions are obtained and answers distributed to applicants prior to entering the examining room. Governor Templeton of Connecticut is reported in the Literary Digest of December 22, 1923, to have read the examination papers of some twenty successful applicants and found "that all twenty read precisely alike down to the last word. The impostors were not even smart enough to change the phrasing." One of the products of this unscrupulous procedure is reported as Geo. Sutcliffe, made a doctor by the diploma mill and for $100 purchased his license to practice in Connecticut. He is now reported as charged with manslaughter following the death of Albert C. Hoddy, war veteran, on the operating table in Sutcliffe's office overdosed with ether during the removal of a finger. The authorities of Connecticut are quoted as revoking about thirty licenses to practice obtained in that state by fraud and about 150 additional physicians of said state, whose records may be questionable, are to be called before the Grand Jury.

5. In the fifth group are placed the diplomas from extinct colleges issued and dated after the college has closed. The Harvey Medical College[3] of Chicago, according to reports, closed in 1903, yet Victor Richard Ratten presented a Harvey Medical College diploma dated March 8, 1907 at which time, according to reports, Harvey Medical College was not giving any medical instruction. Diplomas of the Southern College of Medicine and Surgery were reported sold in 1917 although the college was closed in 1914. (Fed. Bulletin, Sept., 1915, page 69; Nov., 1917, page 223; Jan., 1918, page 9, 12, 18; Nov., 1918, page 8). These spurious diplomas were reported as recognized by the Eclectic Examining Boards of Florida and Georgia and what of these Boards? In the former state the Eclectic Board was reported ousted by the Governor of Florida for alleged sale of diplomas from extinct colleges at from $300 to $500

[1] Federation Bulletin, 1916, page 52.
[2] Federation Bulletin, April, 1916, pages 3 to 26.
[3] Journal American Medical Association, August 2, 1919, page 356.

each. (Fed. Bulletin, 1917, page 126). A statement was published in 1917 of the gigantic issuance of fraudulent certificates to practice medicine and surgery in Florida, Georgia and Tennessee.

6. In the sixth group are classed diplomas of extinct colleges disposed of long after the college closed its doors yet each diploma is dated prior to said closing date. In our own state the Pacific Medical College was incorporated in 1913 with limited quarters at 338½ South Hill street, Los Angeles, reported organized for the purpose of granting Doctor of Medicine diplomas to Osteopathic school students or graduates. Many diplomas were reported as issued to graduates of Osteopathic schools who had not spent a day in the Pacific Medical School.

The diploma of the Pacific Medical College has never been recognized by the Board of Medical Examiners in California and the institution on the eve of threatened prosecution for fraudulent issuance of diplomas reported disincorporation proceedings in January, 1918[1] but evidently a surplus lot of diplomas *remained on hand* for frequent reports from various states relate possession of these diplomas by those who, 'tis stated, have never been in the City of Los Angeles. The recent diploma mill expose in Missouri connects the Pacific Medical School with the sale of diplomas to aspirants for graduation from the Kansas City College of Medicine and Surgery. Reporter Harry Thompson Brundage of the St. Louis *Star*, who under the name of Harry Thompson, purchased diplomas through Ralph A. Voigt, M. D., reported Chief of the diploma mill ring, Kansas City, Missouri, relates that he received a letter from Voigt which contained this cryptic statement: "I have gone to the West Coast for completed stock" (diploma) "so you can have less trouble . . . . . I will send you a wire as soon as it arrives . . . . . " Thompson also refers to a telegram sent to Dr. Adcox signed "Ralph" containing the statement: "Alex. (Alexander, Dean of Kansas City Coll. of Med. and Surg.) agrees to issue final paper (diploma[2]) on Pacific . . . . Can arrange through personal friends sit in Arkansas and complete Thompson." According to Thompson's statement, Dr. Adcox explained this telegram as meaning that Dr. Alexander has agreed to give you (Thompson) a diploma based on credits obtained for you (Reporter Thompson) by Ralph (Voigt) from the college on the Pacific Coast (Pacific Medical College, Los Angeles[2]) . . . . ." Thompson relates he called on Voigt who stated: "I am looking for your diploma in every mail, haven't seen it yet. That bird in California certainly works slow but he's certain and the stuff he puts out is A1. Dr. Alexander has promised to issue another diploma to back up the California (Pacific Medical College[2]) degree."

The Kansas City, Mo. Journal of October 20, 1923, published an interview with Charles A. Johnson, a student and helper at the Kansas City College of Medicine and Surgery who relates, "In the room I used as an employee of the college, I (Charles Johnson) heard the sale of two diplomas discussed by Dr. Alexander and pupils in the School (Kansas City College of Medicine and Surgery). These diplomas were to be purchased for $300 each and were to be on the Pacific Medical College of Los Angeles, Cal., which went out of business in 1916, I understood."

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[1] Decree of Dissolution is dated June 7, 1918.

[2] The parenthetical portions are interpolated explanation.

Thus the "paper" goes out "from the college on the Pacific Coast" which reported to the Examining Board of this State that they had disincorporated in January, 1918. How appalling that the corporate laws of California are so lax that any group of individuals for a paltry sum, can incorporate medical schools and sell diplomas without fear of punishment. For several years we have diligently struggled in legislative halls to correct this evil but without success.

The Federation Bulletin of June, 1923, page 132, published a partial list of spurious diplomas of various schools.

To a less extent have questionable diplomas granting the degree of "Doctor of Osteopathy" been issued by unrecognized Osteopathic schools, such as the International College of Osteopathy[1] operates by Chas. E. Murray, reported as conducting a correspondence course at Elgin, Illinois.

It is reported that the diploma of the Illinois College of Osteopathy is not recognized by the American Osteopathic profession.

The Journal of the American Medical Association, October 27, 1923, page 1463, relates that Harry Thompson Brundage, a reporter on the St. Louis *Star*, purchased, under the name of Harry Thompson, an Osteopathic diploma issued by the "American College, Department of Osteopathy" dated February 24, 1923. This institution was reported as incorporated in Illinois in 1916 as the "Metropolitan College" changing to the American College in 1919 and said to be a correspondence diploma mill.

Atlanta School of Osteopathy issued an Osteopathic diploma to Otis Chas. Warburton dated Camden, N. J., June 22, 1904, "endorsed by the Atlantic College of Osteopathy, Wilkesbarre, Pa.," whereas Warburton, in writing the California Board on April 8, 1922, stated he graduated from "The Atlantic School, *Buffalo, N. Y.*" Strange Warburton would study in Buffalo (where no such school existed), obtain his diploma in New Jersey and have it indorsed in Pennsylvania by a school of the same name.

A vast number of chiropractic diplomas have been acquired with ease. Practically all the well known chiropractic schools, in their early existence, have offered "mail order" courses and issued a diploma thereafter. Although this procedure has been stopped by the three leading chiropractic schools in the United States, it is reported as still continued by others. The "American University"[2] of Chicago has long been reported as an institution "making doctors while you wait" (Fed. Bulletin, Sept., 1915, page 71), and the Oriental University,[3] Washington, D. C., was recently subject to a fraud order issued against it by the post office authorities.

But why should one waste time on a correspondence course when chiropractic diplomas may be easily obtained as related by Reporter Harry Thompson of the St. Louis *Star* who also reported that under the name of Thompson he had purchased a diploma from the Progressive College of Chiropractic, Chicago, Illinois, dated March 1, 1923.

Many and diverse are the Chiropractic diplomas obtained after a perfunctory course of study by mail order course or by purchase.

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[1] Federation Bulletin, December 18, page 265.

[2] Federation Bulletin, April, 1917, page 15.

[3] Federation Bulletin, October, 1916, page 60; May, 1917, page 37; January, 1918, page 13; August, 1920, page 215; July, 1921, page 153; August, 1922, page 184; December, 1922, page 293.

The Davenport School of Chiropractic, Davenport, Iowa, was reported, about 1916, to have sold a number of diplomas granting the degree Doctor of Chiropractic (Fed. Bulletin, March, 1917, page 292).

The diploma from Naturopathic sources has been reported for sale and so the story goes, interwoven with every branch of the healing art.

Boards of Medical Examiners may come and Boards will go but traffic in fake diplomas probably as old as the history of the healing art, will continue to invade the realm of medicine and surgery, osteopathy, chiropractic, et al., as long as cupidity appeals to man, and so long as lax state laws permit the incorporation of "sun down" institutions clothed with statutory authority to grant professional degrees without exaction of capable teaching force, satisfactory equipment and honest management. What care the incorporators of such institutions for honor, what care they for human sacrifice so long as they line their pockets with ill gotten gains through sale of degrees? The average state laws offer no safeguard against the incorporation of fake schools and sad to relate, California is one where any group of individuals with about $25.00 to spend, can incorporate any kind of school and issue any kind of degree without molestation.

Little do the public appreciate the value of a strong Medical Practice Act administered by an unprejudiced yet fearless Board of Examiners for 'tis such a barrier that stems the tide of the product of these "diploma mills," best accomplished if there be a provision in the Medical Act granting the Board power to "approve" schools and investing the Board with the authority to accept applications from graduates of soundly reliable colleges while rejecting the product of the "mushroom" institutions. Power of disapproval affords an incentive for the proper conduct of a school. When questionable procedures are indulged in, a state Board is then empowered to refuse to recognize graduates of such schools.

That some degree of success may be attained in a general policy of the product of the "diploma mills," each State Board must keep in close touch with the policies of the professional schools as well as the procedures adopted by the various licensing boards throughout the United States. The longer the service of members on a Board of Medical Examiners, the better protected is the population of such state from the "fakir" with fraudulent credentials or the undesirable with an unsavory record from another state. A state is indeed unfortunate that finds its Examining Board frequently upset and its membership changed by political exigencies. This is emphatically true when the executive officer is changed, particularly in those states where such a change necessitates the transfer of the Board's records from one city to another with the invariable resultant loss of most important documents.

The question as to what is to be done to correct the evil of the fraudulent diploma and the fraudulent certificate, has afforded the newspapers opportunity to offer suggestions, some of which we quote.

The Boston *Transcript*, rather than presenting a means of curbing the evil, offers the suggestion that, "The quack to be sure we shall no doubt always have with us. . . . . No state can endow its citizens with common sense, but the state can at least prevent such wholesale exploitation of the credulity of the ignorant as now prevails."

The Pottstown (Pa.) *News* says: "In rounding up the quack doctors who are practicing under the diplomas of fake medical schools, the state authorities are doing the public an important service, when the

state permits an illegal or fake practitioner to practice right under their nose, there's something wrong. . . . " This seems applicable to Missouri, home of the "diploma mills" and the reported haven of the illegal practitioner where so far as we have heard, no organized movement has been made to stop the manufacture of "fake doctors" or the practice of the unlicensed.

U. S. Senator Royal Copeland, M. D., former Dean of the New York Homeopathic College, later Health Commissioner of New York, has caused a resolution to be introduced in congress calling for a federal investigation into the fake diploma and fraudulent license situation, specifically directing investigation as to whether the United States mails have been fraudulently used by self-styled medical institutions for the purpose of fraud in connection with the sale of degrees or diplomas in preparation for medical practice. He urges that the states adopt an annual registration as a check on illegal practice. Since 1917, California has had such a requirement in our Medical Practice Act which has proven of inestimable value.

The New York *Times* suggest the remedy for correcting the diploma evil, fraudulent license menace and illegal practice situation lies in the advisability of setting up a single examining board, commenting that the difficulties now faced by Connecticut are due to a multiplicity of boards "with a resultant lack of responsibility."

California practitioners of the healing art have been under the administrative jurisdiction of a single Board of Medical Examiners for many years until the general election of November 7, 1922, created two additional boards so that we now have the healing art in California under the jusidiction of (1) Board of Medical Examiners, (2) the Board of Osteopathic Examiners, (3) the Board of Chiropractic Examiners.

We hope that this experiment in distributing administrative and enforcement obligations between three boards in California will not result in "lack of responsibility" but will operate to the satisfaction of our electorate.

LEGAL REPORT OF THE NORTHERN DISTRICT.

VIOLATIONS OF SECTION 17 OF THE MEDICAL PRACTICE ACT.

San Francisco, California, January 2, 1924.

DR. C. B. PINKHAM, *Secretary-Treasurer,*
Board of Medical Examiners,
Sacramento, California.

DEAR DOCTOR: Enclosed herewith is the annual report of the Legal Department of the North for the year ending December 31, 1923.

Name of case	Location	Date initiated	Disposition
Bong, Lee Tai	Stockton	March 14, 1923	Dismissed, May 1, 1923.
Bong, Lee Tai	Stockton	July 21, 1922	Dismissed, March 31, 1923.
Brown, H. H.	Rio Vista	October 12, 1922	Pending trial.
Brown, W. R.	Haywards	May 16, 1922	Pending hearing.
Bleschmidt, E. C.	Williams	July 26, 1921	Reserve calendar (Chiropractor).
Cho, Lau Yit	San Francisco	May 16, 1922	Dismissed, June 7, 1923. New complaint filed. Hearing had pending disposition.
Cho, Lau Yit	San Francisco	November 5, 1923	Dismissed, December 27, 1923. New complaint filed. Hearing had pending disposition.
David, T. H.	Sacramento	April 25, 1922	Pending hearing.
David, T. H.	Sacramento	July 18, 1922	Pending hearing.
Foster, H. A.	Oakland	December 28, 1922	Reserve calendar (Chiropractor).
Foster, June	Oroville	October 30, 1920	Reserve calendar (Chiropractor).
Foster, Marie H.	Stockton	July 12, 1923	Reserve calendar (Chiropractor)
Fowler, R. Thompson	Oakland	September 31, 1922	Pending trial
Fowler, Wiley	San Francisco	October 18, 1923	Guilty, December 10, 1923. 60 days.
Francis, A. F.	Oroville	December 30, 1920	Reserve calendar.
Hash, Blanche	Oroville	December 30, 1920	Reserve calendar (Chiropractor).
Him, Wong	Oakland	February 1, 1923	Pending trial.
*Hing, Chew	Stockton	March 14, 1923	Guilty, May 1, 1923. Fine $100.
Hing, Chew	Stockton	July 21, 1922	Dismissed March 31, 1923, following affirmance of judgment by Appellate Court re jurisdiction.
Hing, Chew	Stockton	May 16, 1922	Dismissed March 31, 1922, following affirmance of judgment by Appellate Court re jurisdiction.
Hing, T. Wah	Sacramento	November 24, 1922	Information dismissed.
Hollenback, H. E.	Woodland	July 21, 1922	Reserve calendar (Chiropractor).
Hoque, M.	San Jose	March 9, 1921	Reserve calendar.
Johnson, G. D.	Stockton	November 1, 1923	Guilty, December 3, 1923. Fine $150; paid December 11, 1923.
*Kam, Wong	Fresno	December 14, 1922	Guilty, January 10, 1923. Fine $150.
Keel, Fannie	Antioch	February 16, 1922	Reserve calendar (Chiropractor).
Kin, Wong	Fresno	May 24, 1922	Pending trial.
King, F. J.	Yuba City	December 20, 1922	Pending trial.
Lau, Harry Sun	Oakland	February 1, 1923	Pending trial.
Lancelle, Rose	Stockton	December 20, 1923	Pending hearing.
Leather, S. S.	Lodi	May 6, 1922	Reserve calendar
LeRoy, F. J. M.	Yuba City (No.100)	.....	Convicted on fraudulent check charge.
Low, Harry S.	Oakland	February 1, 1923	Pending trial.
McCurdy, Lucy Shirley	Sacramento	November 8, 1923	Pending hearing.
Mar, M. T.	Stockton	March 14, 1923	Dismissed, May 1, 1923.
Miller, Orlando E.	San Francisco	March 1, 1923	Dismissed, March 16, 1923.
Minaker, May R.	San Francisco	May 17, 1923	Guilty, September 5, 1923; probation 6 months.
Nam, Wong	Fresno	December 14, 1922	Pending hearing.
On, Poo	Modesto	May 11, 1923	Pending trial.
On, Poo	Modesto (No.1460)	September 19, 1922	Guilty, February 8, 1923. Fine $500, paid February 13, 1923.
Reorda, Catrina	San Jose	May 26, 1923	Dismissed, August 7, 1923.

*Due Board.

LEGAL REPORT OF THE NORTHERN DISTRICT—Continued.

VIOLATIONS OF SECTION 17 OF THE MEDICAL PRACTICE ACT—Continued.

Name of case	Location	Date initiated	Disposition
Rhyan, A.	Santa Cruz	November 7, 1922	Pending trial.
Rich, Louise	San Jose	March 9, 1921	Reserve calendar (Chiropractor).
Sawyer, C. A.	Santa Rosa	July 6, 1922	Pending trial.
Stover, George	San Francisco	February 23, 1923	Dismissed.
Stover, George	San Francisco	March 31, 1923	Dismissed.
Strauss, W. A.	Vallejo	April 3, 1922	Pending trial.
Sou, T. (formerly shown as T. Ten)	Fresno (No. 18)	December 14, 1922	Pending trial.
Ten T. (see above).			
Tomito, H.	Sacramento	November 2, 1922	Pending trial.
Tong, Hick Wah	Chico	August 19, 1920	Reserve calendar (Chiropractor).
Vernengo, Charles	San Francisco	May 8, 1923	Fugitive.
Wagenmann, M.	Stockton	December 20, 1923	Pending hearing.
Waites, S. W.	Oakland	February 1, 1923	Pending trial.
Wakaume, S.	Sacramento	November 30, 1921	Erroneously shown as dismissed on 1922 report. District Attorney refuses to prosecute.
Wan, Fong	Oakland	February 1, 1923	Pending trial.
Wo, N. S.	Stockton	July 21, 1922	Pending trial.
Wo, N. S.	Stockton	March 14, 1923	Pending trial.
Wong, Y.	Stockton	May 20, 1922	Dismissed, March 31, 1923, following affirmance of judgment by appellate court re jurisdiction.
Wong, Y.	Stockton	July 21, 1922	Dismissed March 31, 1923, following affirmance of judgment of appellate court re jurisdiction.
*Wong, Y.	Stockton	March 14, 1923	Guilty, May 1, 1923. Fine $100.
Yowd, Geraldine	Richmond	February 8, 1922	Reserve calendar (Chiropractor).
Yue, Wong	Fresno	May 24, 1922	Pending hearing.
Yue, Wong	Fresno	December 14, 1922	Guilty, January 10, 1923. Fine $100.
Zimmerman, Arthur	Richmond	April 4, 1922	Reserve calendar (Chiropractor).

*Due Board.

Resume.

Guilty	8
Dismissed	12
Acquitted	0
Pending trial	17
Pending hearing	9
Reserve calendar	15
Fugitive	1
Information dismissed	1
Total cases	63

Fines Imposed.

Paid Court	$1,000 00
Paid Board	487 50
Due Board	262 50

VIOLATIONS OF SECTION 14.

(Unprofessional Conduct).

Name	Offense charged	Disposition
Charles, Harvey P.	Subdivision 5, Section 14	Probation two years.
Elliott, C. R.	Subdivision 6, Section 14	Revoked.
Hadley, F. H.	Subdivision 7a, Section 14	Probation two years. Reversed on appeal.
Haruki, Riuhei	Subdivision 7a, Section 14	Probation one year.
Mutchmor, John T.	Subdivision 1, Section 14	Dismissed.
Thwaites, George E.	——————, Section 14	Pending.
Grisso, Davis	Subdivision 7a, Section 14	Dismissed.
Grisso, Davis	Subdivision 8, Section 14	Reversed; appeal taken.

LEGAL REPORT OF THE NORTHERN DISTRICT—Continued.

Appeals—Supreme Court.

Berry vs. Board, affirmed, January 23, 1923.

Appeals—Appellate Court.

Hing, Chew; People vs., re jurisdiction, affirmed March 31, 1923.
Wong, Y.; People vs., re jurisdiction, affirmed March 31, 1923

Writs—Superior Court.

Grisso vs. Board; Board reversed, February 23, 1923.
Grisso vs. Board; pending.
Hadley vs. Board; Board reversed, August 2, 1923.

VIOLATIONS OF PENAL STATUTES BY LICENSED PHYSICIANS.

Board unable to take action in following cases because of refusal of interested parties to file complaints. Dismissals were had in police court for same reason.

Name	Location	Charge	Date initiated	Disposition
Lamb, W. N.	San Francisco	Murder (result of abortion)	July 21, 1923	Dismissed, August 7, 1923.
Lamb, W. N.	San Francisco	Murder (result of abortion)	July 21, 1923	Dismissed, August 7, 1923.
Long, C. C.	San Francisco	Abortion	July 21, 1923	Dismissed, August 14, 1923.
O'Donnell, G. C.	San Francisco	Abortion	April 24, 1923	Dismissed, May 5, 1923.
Tyrrell, Geo. M.	San Francisco	Violation Harrison Narcotic Act	September 22, 1923	Dismissed, December 7, 1923.
			August 14, 1923	Pending for trial.

VIOLATIONS OF PENAL STATUTES BY UNLICENSED CHIROPRACTOR.

Name	Location	Charge	Date initiated	Disposition
Morani, P. A.	Oakland	Murder (result of abortion)	September 20, 1923	Jury disagreed, December 29, 1923. Pending retrial.

Respectfully submitted.

(Signed) A. B. Bianchi,
Chief Counsel,
(Signed) H. G. Henderson,
Special Agent.

LEGAL REPORT OF SOUTHERN DISTRICT.

Los Angeles, California, January 1, 1924.

DEAR DR. PINKHAM: Submitted herewith is an annual report of the Investigation Department for the Southern District of the Board of Medical Examiners of the State of California for the year ending December 31, 1923.

CASES FOR VIOLATION STATE MEDICAL PRACTICE ACT, PENDING JANUARY 1, 1923.

Name of case	Location	Date initiated	Disposition
*Alvarado, Clemente	Monrovia	June 23, 1921	Pending. Defendant not apprehended.
Anger, Arthur	Los Angeles	March 21 1921	Pending for trial. Off calendar.
Boswell, L. R.	Los Angeles	March 11, 1921	Pending. Defendant not apprehended.
*Brandt, P. F.	Long Beach	October 26, 1921	Pending for preliminary examination. Off calendar.
Brimhall, S. E.	Los Angeles	November 25, 1921	Pending for trial. Off calendar.
Bunnell, Gordon	Los Angeles	February 23, 1922	Pending for trial. Off calendar.
Calvert, E. J.	Los Angeles	January 2, 1920	Pending for trial. Off calendar.
Calvert, E. J.	Los Angeles	April 29, 1920	Jury disagreed May 7, 1920. Pending for retrial. Off calendar.
Calvert, E. J.	Los Angeles	February 25, 1921	Jury disagreed May 7, 1920. Pending for retrial. Off calendar.
Carner, Harry L.	Los Angeles	January 7, 1921	Bail forfeited. Pending.
Caron, Maria	Los Angeles	March 20, 1922	Pending.
Carter, E. E.	Los Angeles	September 21, 1921	Pending for trial. Off calendar.
Carter, Sherman F.	Los Angeles	December 16, 1920	Pending for trial. Off calendar.
Christopherson, A.	Los Angeles	December 22, 1919	Pending. Defendant not apprehended.
Clements, John Doe	Los Angeles	March 4, 1922	Pending. Defendant not apprehended.
*Closson, G. M.	Upland	December 8, 1922	Pending for preliminary examination. Off calendar.
xColeman, Joseph H.	Los Angeles	August 13, 1920	Guilty, October 27, 1921. $100 or 60 days. Judgment affirmed on appeal, January 18, 1923. Fine paid, January 23, 1923.
Comeau, H. A.	Los Angeles	March 11, 1921	Pending for trial. Off calendar.
*Creighton, Frank	San Diego	November 13, 1922	Pending. Defendant not apprehended.
*Creighton, Frank	San Diego	November 13, 1922	Pending. Defendant not apprehended.
*Creighton, J.	San Diego	November 13, 1922	Pending. Defendant not apprehended.
*Creighton, J.	San Diego	November 13, 1922	Pending. Defendant not apprehended.
Del Conde, Honorine	Los Angeles	December 28, 1922	Plead guilty, January 2, 1923. $100 or 90 days. Sentence suspended for two years.
Del Conde, John Doe	Los Angeles	December 27, 1922	Pending. Defendant not apprehended.
*Dick, G. C.	Reedley	August 25, 1922	Pending for preliminary examination. Off calendar.
*Dominguez, Armando	Corona	September 7, 1921	Pending for trial. Off calendar.
Duran, Mrs. L.	Belvedere	November 6, 1922	Plead guilty, January 19, 1923. Granted probation for two years.
*Edgerton, Joseph B.	Banning	May 15, 1922	Pending for trial. Off calendar.
*Ehrenstrom, Philip	Los Angeles	March 12, 1919	Violation of probation. Bail forfeited. Defendant not apprehended. Pending.
Elliott, J. J.	Los Angeles	December 23, 1921	Pending for trial. Off calendar.
Frazer, C. F.	Escondido	November 9, 1922	Dismissed, January 17, 1923, because information was not filed within time prescribed by law.
Frazer, C. F.	Escondido	November 9, 1922	Dismissed, January 17, 1923, because information was not filed within time prescribed by law.
Frederick, F. F.	Monrovia	November 24, 1920	Guilty, October 13, 1921. $200 or alternative at rate of $2 for each day served in county jail. Pending on appeal.
*Gatzlaf, Bert	Santa Ana	June 23, 1922	Pending for trial. Off calendar.
*Gatzlaf, Rachel M.	Santa Ana	June 23, 1922	Pending for trial. Off calendar.
Gibbon, J. W.	Los Angeles	September 29, 1921	Pending for trial. Off calendar.

*No information of any action having been taken during past year.
xDue Board.

CASES FOR VIOLATION STATE MEDICAL PRACTICE ACT, PENDING JANUARY 1, 1923—Continued.

Name of case	Location	Date initiated	Disposition
Greenfield, A. H.	Los Angeles	January 23, 1922	Pending for trial. Off calendar.
Greenwell, Chas. E.	Los Angeles	September 20, 1921	Pending for trial. Off calendar.
*Habich, Janet E.	Long Beach	October 26, 1921	Pending for preliminary examination. Off calendar.
Haffner, G. C.	Los Angeles	January 18, 1921	Pending for trial. Off calendar.
Haggard, Merlin R.	Los Angeles	August 24, 1921	Pending for trial. Off calendar.
*Halverson, Owen W.	Long Beach	April 25, 1922	Pending for preliminary examination. Off calendar.
Hambley, R. H.	Los Angeles	April 24, 1922	Pending for trial. Off calendar.
Heard, Frances M.	Los Angeles	June 2, 1920	Pending for trial. Off calendar.
Holmes, Sidney Cecil	Huntington Park	November 10, 1920	Guilty, October 13, 1921. $100 or alternative at rate of $2 for each day served in county jail. Pending on appeal.
Holmes, Sidney Cecil	Huntington Park	July 5, 1921	Guilty, October 13, 1921. $200 or alternative at rate of $2 for each day served in county jail. Pending on appeal.
Hubley, E. Bernard	Los Angeles	March 7, 1921	Pending for trial. Off calendar.
Hunt, A. E.	Ontario	January 25, 1921	Guilty, May 31, 1921. 60 days. Pending on appeal.
Ivarson, M.	Pomona	March 24, 1921	Guilty, February 2, 1922. 90 days. Pending on appeal.
Johnson, Cyrus E.	Los Angeles	February 4, 1921	Jury disagreed, November 8, 1921. Pending for retrial. Off calendar.
Johnson, Cyrus E.	Los Angeles	November 19, 1921	Pending for trial. Off calendar.
Johnson, Myrtle S.	Los Angeles	August 9, 1920	Pending. Defendant not apprehended.
Jordan, George W.	Los Angeles	July 28, 1921	Pending for trial. Off calendar.
Ketelle, H. A.	Long Beach	December 20, 1920	Guilty, May 18, 1921. 90 days. Pending on appeal.
Kirby, H. J.	Los Angeles	July 28, 1921	Pending for trial. Off calendar.
Korf, J.	Los Angeles	February 28, 1921	Pending. Defendant not apprehended.
Leiser, Frederick R.	Los Angeles	March 3, 1920	Bail forfeited. Pending. Defendant not apprehended.
*Lighthall, John Doe	Long Beach	November 10, 1920	Pending. Defendant not apprehended.
Lilly, G. R.	Pasadena	September 5, 1922	Pending. Held to answer to Superior Court for trial.
*McCall, T. D. S.	Ludlow	February 8, 1921	Pending for preliminary examination. Off calendar.
*McCann, John W.	Hemet	January 7, 1921	Pending for preliminary examination. Off calendar.
Mancella, J.	Los Angeles	September 21, 1920	Pending. Defendant not apprehended.
Mancillas, Julio L.	Los Angeles	October 20, 1921	Pending. Defendant not apprehended.
Mills, G. P.	Los Angeles	April 19, 1921	Pending for trial. Off calendar.
Nogle, L. R.	Los Angeles	August 17, 1921	Pending for trial. Off calendar.
Moon, Edith Iona	Los Angeles	March 26, 1921	Pending for trial. Off calendar.
Nelson, Roy E.	Los Angeles	September 13, 1921	Pending for trial. Off calendar.
Nettle, E. R.	Los Angeles	August 3, 1920	Pending for trial. Off calendar.
Newman, Frederick I.	Los Angeles	December 19, 1921	Pending for trial. Off calendar.
Parrish, A. H.	Inglewood	March 25, 1921	Pending for preliminary examination. Off calendar.
Parrish, A. H.	Inglewood	April 5, 1921	Guilty, October 11, 1921. $250 or alternative at rate of $2 for each day served in county jail. Judgment reversed on appeal, October 9, 1922. Pending for trial.
Peterson, C. C.	Los Angeles	August 19, 1920	Pending for trial. Off calendar.
Powell, Lester J.	Los Angeles	February 20, 1922	Pending. Defendant not apprehended.
Prill, Fred	Los Angeles	January 5, 1921	Pending for trial. Off calendar.
Pyott, F. F.	Los Angeles	March 2, 1921	Pending for trial. Off calendar.
Pyott, F. F.	Los Angeles	April 28, 1921	Pending for trial. Off calendar.
*Raper, V. W.	Hanford	August 23, 1922	Pending for preliminary examination.
Riehman, E. F.	Los Angeles	July 25, 1921	Pending for trial. Off calendar.
Roberts, G. H.	Los Angeles	November 13, 1920	Pending. Defendant not apprehended.
Robeson, H. A.	Los Angeles	January 5, 1921	Jury disagreed, February 14, 1921. Pending for trial. Off calendar.
Rogge, Herman F.	Santa Monica	April 20, 1922	Pending for arraignment and plea. Defendant left jurisdiction.

*No information of any action having been taken during past year.

CASES FOR VIOLATION STATE MEDICAL PRACTICE ACT, PENDING JANUARY 1, 1923—Continued.

Name of case	Location	Date initiated	Disposition
Saunders, H. C.	Huntington Beach	April 11, 1922	Guilty, September 18, 1922. 120 days. Judgment affirmed on appeal March 12, 1923.
Schreiber, Henry F.	Los Angeles	July 23, 1921	Pending for trial Off calendar.
Seddon, Thomas E.	Los Angeles	January 3, 1921	Pending for trial. Off calendar.
Seddon, Thomas E.	Los Angeles	February 14, 1921	Pending for trial. Off calendar.
Seddon, Thomas E.	Los Angeles	April 6, 1921	Pending for trial. Off calendar.
Shields, L. Edward	Los Angeles	November 23, 1921	Pending for trial. Off calendar.
Simon, Leo H.	Los Angeles	December 13, 1920	Jury disagreed, April 29, 1921. Pending for retrial. Off calendar.
Smith, Cora C.	Los Angeles	August 12, 1921	Pending. Defendant not apprehended.
*Stanley, Mrs. B.	Redlands	March 7, 1922	Pending for preliminary examination. Off calendar.
Steffens, Minna M.	Los Angeles	August 19, 1921	Pending for trial. Off calendar.
Steffens, Pierre C.	Los Angeles	August 5, 1921	Pending for trial. Off calendar.
Stokes, Theodore V.	Los Angeles	January 18, 1921	Pending for trial. Off calendar.
Stokes, Theodore V.	Los Angeles	March 7, 1921	Guilty, March 10, 1921. $200 or 90 days. Judgment of lower court reversed October 25, 1922. Plead guilty, January 23, 1923. Granted probation for one year.
Sweetland, A. T.	Los Angeles	January 25, 1922	Pending for trial. Off calendar.
Thompson, W. B.	Los Angeles	October 25, 1921	Pending. Defendant not apprehended.
*Tracy, Jennie L.	Pasadena	July 19, 1921	Pending for trial. Off calendar.
Von Prillwitz, Otto	Los Angeles	July 10, 1920	Pending. Defendant not apprehended.
Waldeck, Belle	San Pedro	September 29, 1921	Pending for trial. Off calendar.
Warner, Mark S.	Los Angeles	June 24, 1920	Pending. Defendant not apprehended.
*White, J. F.	Bakersfield	January 10, 1922	Pending for trial. Off calendar.
Willis, J. E.	Porterville	August 26, 1922	Guilty, November 2, 1922. 150 days. Judgment of lower court affirmed on appeal.
Willis, W. F.	Los Angeles	July 22, 1921	Pending for trial. Off calendar.
Young, M. Marguerite	Los Angeles	April 16, 1921	Pending for trial. Off calendar.
Young, R. D.	Los Angeles	April 15, 1921	Pending for trial. Off calendar.

*No information of any action having been taken during past year.

CASES FOR VIOLATION STATE MEDICAL PRACTICE ACT, INITIATED BETWEEN JANUARY 1, 1923, AND DECEMBER 31, 1923.

Name of case	Location	Date initiated	Disposition
Arnold, Buck	Los Angeles	March 21, 1923	Not guilty, April 20, 1923.
Baldenama, V.	Los Angeles	April 27, 1923	Plead guilty, April 30, 1923. $100 or 100 days. Sentence suspended.
Barkett, Jane Doe	Oxnard	July 25, 1923	Plead guilty. Granted probation for one year, December 27, 1923.
Berry, J. L.	Long Beach	February 7, 1923	Defendant discharged after preliminary examination, April 23, 1923.
Bisbee, J. F.	Los Angeles	March 24, 1923	Defendant discharged April 11, 1923.
xChan, G. S.	Los Angeles	November 22, 1923	Plead guilty, November 27, 1923. $100 or 100 days. Fine paid.
Chandler, Dan	Los Angeles	March 12, 1923	Plead guilty, April 18, 1923. $100 or 100 days. Fine paid.
Chavez, Vevean	Los Angeles	September 20, 1923	Guilty, October 10, 1923. 60 days. 50 days of sentence suspended; defendant committed to city jail for 10 days.
Corey, Mrs. L.	Newhall	February 1, 1923	Plead guilty, March 5, 1923. Granted probation for two years.
Dalman, Thekla	Barstow	November 26, 1923	Pending for preliminary examination.
Erkelens, D. W.	El Centro	January 20, 1923	Dismissed, October 8, 1923. Defendant deceased.
Espinoza, Emulia	Los Angeles	July 21, 1923	Plead guilty, July 21, 1923. $100. Sentence suspended for two years.

xDue Board.

CASES FOR VIOLATION STATE MEDICAL PRACTICE ACT, INITIATED BETWEEN JANUARY 1, 1923, AND DECEMBER 31, 1923—Continued.

Name of case	Location	Date initiated	Disposition
Frank, Northrup	Los Angeles	May 26, 1923	Plead guilty, May 31, 1923. $100 or 100 days. Sentence suspended.
Fun, Chew	Los Angeles	May 11, 1923	Plead guilty, May 16, 1923. 90 days. Sentence suspended for two years.
Garay, Juan de Dios	Los Angeles	April 27, 1923	Dismissed, July 2, 1923.
Garay, Juan de Dios	Los Angeles	October 30, 1923	Dismissed, December 13, 1923.
Gelinn, Mabel	Los Angeles	August 2, 1923	Guilty, October 12, 1923. $100. Fine paid.
xGibson, W. C.	San Diego	February 27, 1923	Guilty, June 5, 1923. $120 or 60 days Fine paid.
Gibson, W. C.	Beverly	November 7, 1923	Pending. Defendant held to answer to Superior Court for trial.
Gibson, W. C.	Los Angeles	November 14, 1923	Pending. Defendant not apprehended.
Gonzalez, Josefina Diaz	Los Angeles	March 1, 1923	Plead guilty, March 5, 1923. 90 days. Sentence suspended for two years.
Hernandez, Benjamin	Los Angeles	April 27, 1923	Plead guilty, April 30, 1923. $100 or 100 days. Sentence suspended.
Hobson, Irene	Hollywood	October 13, 1923	Not guilty, December 4, 1923.
Huggett, William	Santa Barbara	July 26, 1923	Dismissed, July 28, 1923.
Johnson, E. S.	Riverside	January 17, 1923	Not guilty, May 17, 1923.
Jolley, John E.	Los Angeles	October 19, 1923	Dismissed, October 19, 1923.
King, Jack F.	Los Angeles	August 1, 1923	Guilty, October 12, 1923. $500. Fine paid.
King, Jack F.	Los Angeles	September 20, 1923	Dismissed, October 13, 1923.
Lee, S. P.	Long Beach	February 7, 1923	Defendant discharged after preliminary examination, March 30, 1923.
Leung, T.	Los Angeles	August 24, 1923	Plead guilty, August 28, 1923. $100 or 100 days. Fine paid.
Mancillas, J.	San Bernardino	February 8, 1923	Plead guilty, March 29, 1923. 120 days. Sentence suspended.
Mancillas, Julius L.	Belvedere	October 13, 1923	Pending for preliminary examination.
Manz, E. A.	Los Angeles	January 4, 1923	Plead guilty, February 15, 1923. 60 days. Sentence suspended for two years.
Markiewicz, O. A.	Los Angeles	August 24, 1923	Plead guilty, August 24, 1923. $200 or 100 days. Fine paid.
Markiewicz, O. A.	Los Angeles	August 24, 1923	Plead guilty, August 24, 1923. $200 or 100 days. Fine paid.
Martin, J. E.	Ontario	August 9, 1923	Plead guilty, September 20, 1923. 90 days. Sentence suspended.
Neufeld, Aaron	Wasco	August 14, 1923	Plead guilty, October 1, 1923. Granted probation for two years.
Palmer, James F. (alias "Dr. James A. Bennett")	Los Angeles	January 31, 1923	Pending. Defendant not apprehended.
Pfennig, Mrs. M. S.	Pasadena	April 9, 1923	Plead guilty, June 1, 1923. Granted probation for six months, June 15, 1923.
Quon, D. R.	Los Angeles	October 25, 1923	Plead guilty, October 25, 1923. $100 or 100 days. Fine paid.
Quon, S. P.	Los Angeles	September 20, 1923	Plead guilty, September 21, 1923. $100 or 100 days. Fine paid.
Reza, Luis	Anaheim	April 23, 1923	Plead guilty, June 1, 1923. Granted probation for two years.
Riker, Isador I.	Los Angeles	March 16, 1923	Guilty, May 15, 1923. $100 or 100 days. Sentence suspended.
Rocha, Jane Doe	Los Angeles	July 28, 1923	Pending. Defendant not apprehended.
Rosen, J.	Los Angeles	May 21, 1923	Pending. Bail forfeited.
Rosen, J.	Los Angeles	September 12, 1923	Pending. Defendant not apprehended.
Saint Elmo, John Doe	Los Angeles	April 11, 1923	Pending. Defendant not apprehended.
Salgado, Bernarda	Los Angeles	March 16, 1923	Pending. Defendant not apprehended.
Silos, Terresa	Los Angeles	July 31, 1923	Plead guilty, July 31, 1923. $100 or 100 days. Sentence suspended for two years.
Silveria, Tomas	Redlands	August 22, 1923	Pending. Defendant held to answer to Superior Court for trial.
Sotelo, Antonia	Los Angeles	August 2, 1923	Defendant discharged after preliminary examination, September 14, 1923.
Sun, C. T.	Los Angeles	September 6, 1923	Plead guilty, September 6, 1923. $100 or 100 days. Fine paid.
Tarney, R. Elliott	Tehachapi	June 5, 1923	Pending for preliminary examination.

xDue Board.

CASES FOR VIOLATION STATE MEDICAL PRACTICE ACT, INITIATED BETWEEN JANUARY 1, 1923, AND DECEMBER 31, 1923—Continued.

Name of case	Location	Date initiated	Disposition
Taylor, Z. A.	Los Angeles	October 27, 1923	Plead guilty, October 29, 1923. $100 or 100 days. Fine paid.
Valor, Mrs. Vera	Huntington Park	July 24, 1923	Defendant discharged after preliminary examination, August 15, 1923.
Webb, E. T.	Los Angeles	March 30, 1923	Plead guilty, April 10, 1923. $250 or 125 days. Fine paid.
Wickham, J. O.	Los Angeles	September 20, 1923	Plead guilty, September 25, 1923. 180 days. Sentence suspended for two years.
Williams, S. H.	Long Beach	February 21, 1923	Plead guilty, June 12, 1923. $100 or 100 days. Fine paid.
Williams, S. H.	Long Beach	February 24, 1923	Not guilty, July 10, 1923.
Yglesias, Carmen	Los Angeles	May 11, 1923	Plead guilty, May 16, 1923. 90 days. Sentence suspended for two years.
Yglesias, G. P.	Los Angeles	May 11, 1923	Plead guilty, May 16, 1923. $250 and 90 days. Fine paid. Jail sentence suspended for two years.
Young, Herbert E.	Redlands	March 28, 1923	Pending for trial January 7, 1924.

SUMMARY.

	Cases pending January 1, 1923	Cases initiated between January 1, 1923 and December 31, 1923	Total
Guilty	2	34	36
Not guilty	0	4	4
Dismissed	3	7	10
Discharged after preliminary examination	0	4	4
Pending	90	13	103
Total	95	62	157

APPEALS.

Pending January 1, 1923.

Judgment affirmed on appeal	3
Pending on appeal	7
Total	10

FINES.

Fines imposed and paid into court January 1, 1923, to December 31, 1923	$2,420 00
Fines imposed prior to January 1, 1923 and paid into court after judgment affirmed on appeal	100 00
Total	$2,520 00
Board's percentage	$1,890 00

CHARGES OF UNPROFESSIONAL CONDUCT.

Name of case	Location	Offense charged	Disposition
Adams, Charles B.	Los Angeles	Subdivision 5, Section 14	Guilty, February 14, 1923.
Bell, David Reece	Lynwood	Subdivision 5, Section 14	Guilty, February 14, 1923. Judgment suspended. Pending. Off calendar.
Berry, John Lafayette	Maywood	Subdivision 8, Section 14	
Deacon, George	Pasadena	Subdivision 5, Section 14	Guilty, February 14, 1923. Judgment suspended. Pending. Off calendar.
Dietsch, Curt O.	Los Angeles	Subdivision 1, Section 14	Pending. Continued to February, 1924, meeting.
Dutcher, Willis	Los Angeles	Subdivision 5, Section 14	Pending. Continued to February, 1924, meeting.
Haigh, Frederic	Los Angeles	Subdivision 1, Section 14	Pending. Continued to February, 1924, meeting.
Hummel, Heinz, Geo. A.		Subdivision 1, Section 14	Pending. Continued to February, 1924, meeting.
Holsman, Chas. K.	Los Angeles	Subdivision 5, Section 14	Pending. Continued to February, 1924, meeting.
Jolley, John E.	Los Angeles	Subdivision 9, Section 14	Guilty. License revoked, February 15, 1923.
Kvello, O. A.	Hemet	Subdivision 5, Section 14	Guilty. Granted probation until October, 1925, meeting.
McDannell, Wm. Raymond	Los Angeles	Subdivision 5, Section 14	Guilty, October 18, 1922. Granted probation for five years, February 14, 1923.
Meradith, C. S.	San Gabriel	Subdivision 5, Section 14	Pending. Continued to February, 1924, meeting.
Mueller, Otto H.	Los Angeles	Subdivision 5, Section 14	Guilty, July 11, 1923. Granted probation until October, 1925, meeting.
Stone, Augusta	Los Angeles	Subdivision 1, Section 14	Pending. Continued to February, 1924, meeting.
Wright, T. B.	Pasadena	Subdivision 5, Section 14	Guilty, February 14, 1923. Judgment suspended. Pending. Off calendar.

WRITS.

Name of case	Kind	Disposition
Berry, John Lafayette	Writ of mandamus	Writ of mandate dismissed, October 4, 1923, and application that writ be made peremptory denied. Respondents' attorneys to prepare findings.

District Court of Appeal.

Name of case	Kind	Disposition
Millsap, Roy, vs. Board	Writ of review	Judgment of Superior Court reversing Board reversed, August 25, 1923

VIOLATION BY LICENTIATES OF THE BOARD OF MEDICAL EXAMINERS OF STATE AND FEDERAL LAWS OTHER THAN THE STATE MEDICAL PRACTICE ACT.

Name of case	Location	Violation	Disposition
Bryson, Charles W.	Los Angeles	Violation Corporate Securities Act	Pending.
*Caron, Maria	Los Angeles	Criminal abortion	Not guilty, March 13, 1923.
Coulthard, George H.	Long Beach	Violation Wright Act	Pending.
Coulthard, George H.	Long Beach	Violation State Poison Act	Pending.
Coulthard, George H.	Long Beach	Violation State Poison Act	Pending.

*Not licensed.

VIOLATION BY LICENTIATES OF THE BOARD OF MEDICAL EXAMINERS OF STATE AND FEDERAL LAWS OTHER THAN THE STATE MEDICAL ACT—Continued.

Name of case	Location	Violation	Disposition
Couthard, George H.	Long Beach	Violation State Poison Act	Pending for preliminary examination, January 5, 1924.
Coulthard, George H.	Long Beach	Violation State Poison Act	Pending for preliminary examination, January 5, 1924.
Fairs, Herbert M.	Glendale	Extortion	Dismissed.
Ham, James G.	Los Angeles	Murder	Dismissed, March 1, 1923.
Hummel, Heinz Geo. A.	Long Beach	Criminal abortion	Pending. Held to answer to Superior Court, August 31, 1923.
Jenkins, Rayel B.	Los Angeles	Violation Corporation Securities Act	Pending.
McMillan, Hugh A.	Long Beach	Violation State Poison Act	Plead guilty, December 26, 1923. $200. Fine paid.
Malsbary, George E	Los Angeles	Violation Harrison Narcotic Act	Indicted by U. S. Grand Jury.
Martin, James J.	Long Beach	Violation State Poison Act	Pending.
Martin, James J.	Long Beach	Violation State Poison Act	Pending.
Richards, James Wm.	Los Angeles	Violation State Poison Act	Plead guilty, September 24, 1923. 180 days in Los Angeles city jail. Notice of appeal.
Shea, J. Russell	Redondo	Violation State Poison Act	Discharged after preliminary examination, November 30, 1923.
Shea, John J.	San Diego	Falsifying Liquor Permit Records	
Sweet, E. A.	Long Beach	Violation State Poison Act	Pending for preliminary examination, January 4, 1924.
Sweet, E. A.	Long Beach	Violation State Poison Act	Pending for preliminary examination, January 4, 1924.
Taylor, C. M.	Glendale	Criminal abortion	Pending. Held to answer to Superior Court for trial, December 14, 1923.
Wood, Lorin F.	Redlands	Passing fictitious check	Pending.

Respectfully submitted.

ALBERT CARTER,
Special Agent.

SEGREGATION OF FINES RECEIVED IN 1923.

1920 Fines Received in 1923.

North—		
Kwong, King L.	$75 00	
Nishino, Tango	75 00	
		$150 00

1921 Fines Received in 1923.

North—		
David, L. H., Chiropractor	$75 00	
McGrannahan, M. J., Chiropractor	75 00	
Norvall, C. L., Chiropractor (part payment)	109 70	
Yuen, Chew	262 50	
		$522 20

1922 Fines Received in 1923.

North—		
Anderson, C. A., Chiropractor	$187 50	
Richardson, A. W., Chiropractor	225 00	
Ross., W. W., Chiropractor	225 00	
Van Ofen, Geo. A., Chiropractor	75 00	
Wehinger, A. O., Chiropractor	75 00	
Whidden, Frank, Chiropractor	75 00	
Yanagawa, T., Chiropractor	75 00	
		937 50
South—		
Holland, B. J., Chiropractor	75 00	
Wing, Tom How, Chiropractor	150 00	
		225 00
		$1,834 70

1923 FINES RECEIVED.

	Paid Court	Paid State Treasurer
North—		
Johnson, G. D., Stockton	$150 00	$112 50
On, Poo, Modesto	500 00	375 00
Ten, T., Fresno	100 00	75 00
Yue, Wong, Fresno	100 00	75 00
	$850 00	$637 50
South—		
Chandler, Dan, Los Angeles	$100 00	$75 00
Gelinn, M., Los Angeles	100 00	75 00
King, Jack, Los Angeles	500 00	375 00
Leung, T., Los Angeles	100 00	75 00
Markiewicz, O. A., Los Angeles	200 00	150 00
Markiewicz, O. A., Los Angeles	200 00	150 00
Quon, D. R., Los Angeles	100 00	75 00
Quon, S. P., Los Angeles	100 00	75 00
Sun, C. T., Los Angeles	100 00	75 00
Taylor, Z. A., Los Angeles	100 00	75 00
Webb, E. T. (Cancer Specialist), Los Angeles	250 00	187 50
Williams, S. H., Los Angeles	100 00	75 00
Yglesias, G. P. (Herbalist), Los Angeles	250 00	187 50
	$2,200 00	$1,649 50

FINES REPORTED BY CONTROLLER AS PAID STATE TREASURER DURING 1923.

	Chiropractors	Orientals	Miscellaneous	Totals North	Totals South
January —North		$225 00		$225 00	
South					
February —North		375 00		375 00	
South					
March —North					
South	$75 00	150 00			$225 00
April —North	672 20	487 50		1,159 70	
South					
May —North	450 00			450 00	
South					
June —North					
South	75 00				75 00
July —North					
South					
August —North					
South					
September—North					
South		75 00	$750 00		$825 00
October —North					
South		150 00			150 00
November—North					
South					
December—North			112 50	112 50	
South		75 00	525 00		600 00
Totals	$1,272 20	$1,537 50	$1,387 50	$2,322 20	$1,875 00
Total, north and south					$4,197 20

FINES REPORTED PAID COURT BUT NOT FORWARDED TO STATE TREASURER.

Northern Department Outstanding, December 31, 1923.

Name	Date	Place of trial	Paid court	Due state treasurer
Beers, Donald (3712)	April 28, 1922	Stockton	$100 00	$75 00
Bramwell, C. E.	April 27, 1922	Stockton	300 00	225 00
Cockerell, Beverly	April 18, 1922	Redwood City	100 00	75 00
Frank, Byron E. (9611)	September 8, 1922	Chico	500 00	375 00
Hook, Charlie (47886)	1920	San Francisco 47886	100 00	75 00
Hing, Chew	March 4, 1923	Stockton	100 00	75 00
Jung, L. C. (296) (alias Wong, Yue)	July 11, 1922	Fresno	150 00	112 50
Kam, Wong	December 14, 1922	Fresno	150 00	112 50
Tomito, H.	December 29, 1922	Sacramento	100 00	75 00
Wo, Po	March 15, 1921	Stockton	100 00	75 00
Wong, Y.	March 14, 1923	Stockton	100 00	75 00
Total			$1,800 00	$1,350 00

Southern Department Outstanding, December 31, 1923.

Name	Date	Place of trial	Paid court	Due state treasurer
Chan, G. S.	November 22, 1923	Los Angeles	$100 00	$75 00
Coleman, Joseph	August 3, 1920	Los Angeles	100 00	75 00
Gibson, W. E.	June 5, 1923	San Diego	120 00	90 00
Greenwood, D. E. (3188)	June 23, 1922	San Luis Obispo	100 00	75 00
Mitchell, Mary (16563)	July 22, 1921		100 00	75 00
Mulkey, Blanche (16739)	September 29, 1921	Los Angeles	100 00	75 00
Wah, Poo	December 29, 1922	Los Angeles	100 00	75 00
Total			$720 00	$540 00
On Appeal—				
Frederick, F. F.	October 13, 1921	Los Angeles	$200 00	
Holmes, Sidney C.	November 13, 1921	Los Angeles	200 00	
Holmes, Sidney C.	October 13, 1921	Los Angeles	100 00	
Total			$500 00	

COST OF ENFORCEMENT, 1923.

	Special agents' expense	Special prosecutors		Total enforcement expense	Fines paid state treasurer
		Expenses	Fees		
Northern District—					
January	$213 99	$46 75	$145 00	$405 75	$225 00
February	8 80			8 80	375 00
March	113 77			113 77	
April	126 62			126 62	1,159 70
May	109 78	11 64		121 42	450 00
June	25 74	45 99	255 00	326 73	
July					
August	16 37			16 37	
September	38 44			38 44	
October	207 02			207 02	
November	50 87			50 87	112 50
December	28 64			28 64	
Totals	$940 44	$104 38	$400 00	$1,444 42	$2,322 20

COST OF ENFORCEMENT, 1923—Continued.

	Special agents' expense	Special prosecutors		Total enforcement expenses	Fines paid state treasurer
		Expenses	Fees		
Southern District—					
January	$59 08	$39 10	$250 00	$348 18	
February	46 60	21 15	260 00	327 75	
March	51 77	49 46	300 00	401 23	$225 00
April	39 33	21 58	205 00	265 91	
May	36 74	54 67	490 00	581 41	
June	77 66	15 36	570 00	663 02	75 00
July	24 25			24 25	
August	22 63			22 63	
September	59 79			59 79	825 00
October	17 36			17 36	150 00
November	51 47			51 47	
December	58 91			58 91	600 00
	$545 59	$201 32	$2,075 00	$2,821 71	$1,875 00

Up to July 1, 1923, when fees and expenses of special prosecutors were discontinued under the legislative budget, the cost of enforcement was $1103.08 in the north and $2,587.50 in the south, while during the past six months the expenditures, exclusive of salaries of special agents, have been $312.70 in the north and $175.50 in the south, with the obligation of prosecution of violators of the law properly placed on the shoulders of the various district attorneys of our state.

Names of licentiates have been changed by marriage or court order and corresponding entry made on the records of the Board as follows:

Date.	*Present Name.*	*Formerly.*
March 29, 1923	Cameron, Nina W.	Andrews.
October 1, 1923	Clifford, Agnes	McCraith.
September 26, 1923	*Haidos, Constantine Geo.	Haidopolous.
April 12, 1923	*Kopp, Anna	Kopciowski.
May 17, 1923	Newell, Perle	Penfield.
March 1, 1923	O'Brien, Arabelle	Feldkamp.
March 1, 1923	Palmer, Virginia	Murray.
January 18, 1923	Rafferty, Rachel	Sharp.
March 22, 1923	Shahovich, Gladys	Patrick.
December 26, 1923	Zalinger, Mary L.	Thompson.

*Changed by court action.

DECEASED—117.

Name	Place of death	Date of death	Publication of death notice	Date of publication
Allan, Robert Thomas, M. D.	Los Angeles	September 30, 1923	Los Angeles Times	October 1, 1923
Allen, E. Lee	Los Angeles	December 14, 1923	Los Angeles Herald	December 14, 1923
Allport, John E., M. D.	Hollywood	September 20, 1923	Hollywood News	September 21, 1923
Anderson, Ross R., M. D.	Salt Lake, Utah	November 9, 1923	Salt Lake Telegram	November 9, 1923
Andrews, Hermonie W., M. D.	Seattle, Wash.	May 24, 1922	Letter	----------
Arbogast, Jacob L., M. D.	Sacramento	September 4, 1923	Sacramento Bee	September 4, 1923
Baker, Clarence Clarke, M. D.	San Francisco	March 25, 1923	San Francisco Call	March 26, 1923
Barber, David C., M. D.	Los Angeles	December 2, 1923	Los Angeles Times	December 4, 1923
Barmore, Wm. Alfred, M. D.	San Francisco	September 26, 1923	Vol. 81, No. 15, Journal American Medical Association	----------
Barnes, Anna Harris, M. D.	San Francisco	September 28, 1923	Bureau of Vital Statistics	----------
Barnes, Henry E. W., M. D.	Santa Ana	May 30, 1923	Anaheim Herald	May 31, 1923
Blair, E. James, M. D.	Los Angeles	January 9, 1923	Vol. 80, No. 6, Journal American Medical Association	----------
Bower, Albert S., M. D.	Hanford	April 1, 1923	Fresno Republican	April 2, 1923
Boylan, Wm. Franklin, M. D.	Bridgeport	November 26, 1923	Bridgeport Chronicle-Union	November 30, 1923
Brisco, Martin L., D. O.	San Jose	February 26, 1923	San Jose Mercury-Herald	February 28, 1923
Brooks, Stephen D., M. D.	Los Angeles	July 4, 1923	Los Angeles Examiner	July 6, 1923
Butts, Hubert Perry, M. D.	Los Angeles	April 8, 1923	Vol. 80, No. 17, American Medical Association	----------
Caldwell, Joseph E., M. D.	Glendale	October 3, 1923	Glendale Press	October 3, 1923
Callanan, Joseph I., M. D.	San Francisco	November 20, 1923	San Francisco Call	November 20, 1923
Cassel, Elizabeth H., M. D.	Berkeley	January 13, 1923	Vol. 80, No. 6, Journal American Medical Association	----------
Chadwick, Benj. Cole, M. D.	Los Angeles	March 11, 1923	Letter	----------
Clark, John Cline N. D.	Pasadena	March 8, 1923	Los Angeles Examiner	March 9, 1923
Cox, H. M., M. D.	San Luis Obispo	March 4, 1923	Vol. 80, No. 13, American Medical Association	----------
Coy, Louis Milton, M. D.	San Bernardino	April 18, 1923	San Bernardino Telegram	April 18, 1923
Dangle, Mary, M. D.	San Francisco	February 25, 1923	Yreka News	March 1, 1923
Dodge, Albert Henry, M. D.	San Francisco	June 11, 1923	San Francisco Call	June 12, 1923
Douglas, Gustav H., M. D.	Sacramento	March 27, 1923	Sacramento Bee	March 28, 1923
Doyle, Olline B., M. D.	Fresno	August 28, 1923	Fresno Bee	August 29, 1923
Duncan, Arthur McDowell, M. D.	Glendale	July 10, 1923	Glendale News	July 10, 1923
Edwards, Samuel G., M. D.	Los Angeles	November 11, 1923	Vol. 81, No. 24, Journal American Medical Association	----------
Emerson, Harry W., M. D.	Centerville	October 21, 1923	Alameda Times-Star	October 22, 1923
Fehlen, August, M. D.	San Francisco	November 13, 1923	Vol. 81, No. 23, American Medical Association	----------
Friedman, Wm. Lloyd	Oakland	December 1, 1923	Oakland Post-Enquirer	December 3, 1923
Foster, Irving C., M. D.	San Francisco	December 6, 1923	San Francisco Examiner	December 7, 1923
Gnekow, Emilie, M. D.	Stockton	October 4, 1923	Stockton Record	October 4, 1923

DECEASED—117—Continued.

Name	Place of death	Date of death	Publication of death notice	Date of publication
Gould, Elisha Tolman, M. D.	Sonora	September 10, 1923	Sonora Democrat	September 15, 1923
Grinnell, Fordyce, M. D.	Newhall	October 5, 1923	Pasadena Star-News	October 6, 1923
Grossman, Edwin L., M. D.	Oakland	November 24, 1923	Post-office	November 24, 1923
Guidinger, Walter A., M. D.	Long Beach	September 18, 1923	Bureau of Vital Statistics	
Gwaltney, Sylvester, M. D.	Los Angeles	January 2, 1923	Los Angeles Herald	January 4, 1923
Harley, Elmer, M. D.	Monrovia	January 28, 1923	California Journal of Medicine	April, 1923
Hazen, Edward H., M. D.	Oakland	August 3, 1923	Vol. 81, No. 9, Journal American Medical Association	
Higgins, Aubrey F., M. D.	San Francisco	October 17, 1923	San Francisco Examiner	October 18, 1923
Hiner, Harry Clayton, D. S. C.	Los Angeles	March 17, 1923	Bureau of Vital Statistics	September 17, 1923
Hon, Ulrich, M. D.	Los Angeles	March 15, 1923	Los Angeles Express	March 16, 1923
Huff, Samuel Gaston, M. D.	Santa Ana	December 16, 1922	California Journal of Medicine	February, 1923
Humfreville, Daniel L., M. D.	Pasadena	February 8, 1923	Vol. 80, No. 9, Journal American Medical Association	
Kaull, J. Lee, M. D.	San Bernardino	December 19, 1923	Los Angeles Times	December 21, 1923
Kearney, Elizabeth F., M. D.	Los Angeles	April 17, 1923	Vol. 80, No. 19, Journal American Medical Association	
Kerschbaumer, Rose, M. D.	Los Angeles	July 27, 1923	Los Angeles Examiner	July 30, 1923
Klotz, B. J., M. D.	San Francisco	December 17, 1923	San Francisco Call	December 18, 1923
Koehler, Geo. Frederick, M. D.	Portland, Ore.	March 11, 1923	Vol. 80, No. 35, Journal American Medical Association	
Kosby, Augustus E., M. D.	Yuba City	March 21, 1923	Yuba Farmer	March 23, 1923
Lawry, O. J.	Redding	November 6, 1923	San Francisco Examiner	November 8, 1923
Leavitt, Granville E.	Beamer Lake, Nev.	September 17, 1923	Sacramento Bee	September 18, 1923
Lewis, Joseph Cresswell, M. D.	San Francisco	September 7, 1923	San Francisco Call	September 10, 1923
Linebaugh, John A., M. D.	San Francisco	April 10, 1923	Letter	
Linn, Hugh James, M. D.	Oakland	February 9, 1923	Vol. 80, No. 12, Journal American Medical Association	
Locke, Clayton W., M. D.	Lindsay	September 26, 1923	Fresno Republican	September 27, 1923
Loffland, Wm. A., M. D.	Whittier	October 9, 1923	Bureau of Vital Statistics	November 21, 1923
Lopp, William	Los Angeles	October 24, 1922	Bureau of Vital Statistics	
Lustig, Daniel D., M. D.	San Francisco	June 27, 1923	San Francisco Bulletin	June 28, 1923
Lydston, G. Frank, M. D.	Los Angeles	March 14, 1923	San Francisco Chronicle	March 15, 1923
Lyon, Samuel B.	Los Angeles	October 25, 1923	Bureau of Vital Statistics	November 21, 1923
Mackerras, Robert H., M. D.	Sierra Madre	August 16, 1923	Los Angeles Times	August 17, 1923
Maclean, Daniel, M. D.	Palmero	July 14, 1923	San Francisco Examiner	July 18, 1923
Magee, Allyn, M. D.	Glendale	August 11, 1923	Los Angeles Times	August 14, 1923
Manger, Charles C., M. D.	Santa Monica	August 21, 1923	Los Angeles Examiner	August 22, 1923
Martindale, John H., M. D.	Santa Monica	July 4, 1923	Santa Monica Outlook	July 5, 1923
Merwin, Caroline S., M. D.	Tsingtau, China	July 10, 1923	San Francisco Examiner	July 15, 1923
Miller, James L., M. D.	Sierra Madre	November 12, 1923	Sierra Madre News	November 16, 1923
Monnett, Hamlin V., M. D.	Santa Cruz	June 8, 1923	Fresno Republican	June 8, 1923
Murphy, Lee Marion, M. D.	South Pasadena	April 18, 1923	Los Angeles Examiner	April 19, 1923
Murphy, Wm. Roe, M. D.	Los Angeles	October 7, 1923	Los Angeles Examiner	October 9, 1923

Neff, Francis F.	Martinez	June 19, 1923	Fresno Bee	June 19, 1923
Noble, Emily, M. D.	San Francisco	May 20, 1923	San Francisco Call	May 21, 1923
Northrup, Daniel B., M. D.	San Diego	September 13, 1923	San Diego Union	September 14, 1923
Pawlicki, Ladislaus, M. D.	San Francisco	December 11, 1923	San Francisco Chronicle	December 12, 1923
Peck, Albert Palmer, M. D.	Berkeley	June 14, 1923	Vol. 81, No. 2, Journal American Medical Association	
Poore, James E., M. D.	Sacramento	January 21, 1923	California Journal of Medicine	April, 1923
Priestley, J. Graves, M. D.	Livermore	November 9, 1923	Stockton Record	November 9, 1923
Purkitt, Theodore T., M. D.	Willows	February 8, 1923	San Francisco Bulletin	February 9, 1923
Purves, John, M. D.	Plumas	August 12, 1923	Vol. 81, No. 23, Journal American Medical Association	
Pyle, Henry Gerkey, N. D.	Long Beach	January 15, 1923	Vol. 80, No. 7, Journal American Medical Association	
Reardan, Thomas B., M. D.	Oroville	September 28, 1923	Oroville Mercury	September 28, 1923
Riggins, Philip, M. D.	Los Angeles	August 14, 1923	Los Angeles Times	August 15, 1923
Rogers, Albert C., M. D.	Los Angeles	December 23, 1923	Los Angeles Examiner	December 24, 1923
Rogers, Benj. H.	San Diego	May 2, 1923	Vol. 80, No. 22, Journal American Medical Association	
Rooney, Henry T., M. D.	San Francisco	January, 1923	California Journal of Medicine	March, 1923
Rose, Leo Dow, M. D.	Utica, Nebraska	November 13, 1923	Letter	December 8, 1923
Roth, Jules Frederick, M. D.	Los Angeles	April 11, 1923	San Francisco Chronicle	April 13, 1923
Rulison, Elbert Tripp, M. D.	Sacramento	August 10, 1923	Sacramento Bee	August 10, 1923
Saphro, Victor Oscar, M. D.	Los Angeles	February 3, 1923	Vol. 80, No. 8, Journal American Medical Association	
Saylin, Abram Joseph, M. D.	Los Angeles	August 7, 1923	Los Angeles Times	August 8, 1923
Schrader, Charles A., M. D.	Tucson, Arizona	May 27, 1923	Vol. 80, No. 26, Journal American Medical Association	
Scott, William G., M. D.	Los Angeles	February 26, 1923	Los Angeles Examiner	February 27, 1923
Serviss, Thomas W., M. D.	San Francisco	June 28, 1923	San Francisco Examiner	June 30, 1923
Sherry, Henry, M. D.	Pasadena	July 14, 1923	Pasadena Star-News	July 14, 1923
Smith, St. Clair, M. D.	Pasadena	May 1, 1923	Pasadena Post	May 2, 1923
Soothill, John H.	Santa Cruz	July 12, 1923	Santa Cruz Sentinel	July 13, 1923
Spriggs, Lemuel W., M. D.	San Francisco	February 16, 1923	San Francisco Chronicle	February 19, 1923
Stevens, Charles A., D. O.	Hayward	September 4, 1923	San Francisco Examiner	September 6, 1923
Stirling, Marian F., M. D.	San Leandro	February 28, 1923	San Leandro Reporter	March 3, 1923
Statton, Leon B., M. D.	San Francisco	August 7,1923	Vol. 81, No. 9, Journal American Medical Association	
Taylor, Arthur W., M. D.	Glendale	March 12, 1923	Glendale News	March 13, 1923
Taylor, Edward Robeson, M. D.	San Francisco	July 5, 1923	San Francisco Examiner	July 6, 1923
Temple, Jackson, M. D.	Santa Rosa	June 23, 1923	San Francisco Buletin	June 23, 1923
Tucker, Elijah Jones, M. D.	Oroville	January 30, 1923	Sacramento Bee	January 31, 1923
Tucker, Joseph E., M. D.	San Diego	May 31, 1923	San Diego Tribune	June 1, 1923
Waggoner, Eugene L., M. D.	Los Angeles	August 21 1923	Vol. 81, No. 10, Journal American Medical Association	
Urquhart, John C., M. D.	Los Angeles	July 5, 1923	Los Angeles Times	July 6, 1923
Wegeforth, Paul, M. D.	Colorado Springs	March 29, 1923	San Diego Sun	March 30, 1923
Whittington, William, M. D.	Dinuba	October 12, 1923	Fresno Republican	October 13, 1923
Willcox, Sylvester W., D. O.	Eureka	September 3, 1923	San Francisco Examiner	September 4, 1923
Williams, Jesse M., M. D.	Los Angeles	February 4, 1923	Los Angeles Examiner	February 5, 1923
Wood, William Lee, M. D.	Monrovia	July 15, 1923	Vol. 81, No. 6, Journal American Medical Association	
Wythe, Stephen, M. D.	Oakland	December 25, 1923	San Francisco Examiner	December 28, 1923

DOCTORS REPORTED AS HAVING DIED IN CALIFORNIA IN 1923, BUT NO RECORD OF LICENSURE IN STATE—TOTAL 67.

Name	Place of death	Date of death	Publication of death notice	Date of publication
Addy, Frank Kurtz, M. D.	Santa Barbara	February 21, 1923	Los Angeles Times	February 23, 1923
Barrios, Bernabe	San Diego	August 17, 1923	Bureau of Vital Statistics	
Beane, Charles W.	Los Angeles	September 15, 1923	Bureau of Vital Statistics	
Beatty, William E.	San Diego	May 28, 1923	Berkeley Gazette	May 29, 1923
Block, Jacob	Philadelphia, Pa.	October 31, 1923	Vol. 81, No. 20, Journal American Medical Association	
Brodbeck, Walter T., M. D.	Los Angeles	January 4, 1923	Los Angeles Herald	January 5, 1923
Brooke, Sarah, M. D.	Atascadero	January 4, 1923	Vol. 80, No. 5, Journal American Medical Association	
Burge, William P., M. D.	San Francisco	February 1, 1923	Vol. 80, No. 10, Journal American Medical Association	
Burkit, Edward, M. D.	Modesto	July 2, 1923	San Francisco Examiner	July 6, 1923
Campbell, S. A.	Long Beach	Feburary 19, 1923	Pomona Progress	February 20, 1923
Case, Rowlin S., M. D.	Pasadena	July 22, 1923	Pasadena Star-News	July 23, 1923
Collins, H. S.	Fairfield	September 17, 1923	Sacramento Bee	September 18, 1923
Cook, George M., M. D.	Sawtelle	May 10, 1923	Bakersfield Echo	May 13, 1923
Dailey, Rosamonde	Los Angeles	August 30, 1923	Los Angeles Times	August 30, 1923
Dake, Walter Marshall, M. D.	San Diego	December 14, 1922	California Journal of Medicine	February, 1923
Daniels, Asa Wilder, M. D.	Pomona	February 27, 1923	Pomona Progress	March 3, 1923
Davis, George W., M. D.	Martinez	February 23, 1923	Martinez Gazette	March 2, 1923
Dyke, Simon P.	San Diego County	October 21, 1923	Bureau of Vital Statistics	November 21, 1923
Erkelins, William	El Centro	September 13, 1923	El Centro Press	September 15, 1923
Fairchild, M. Augusta	Los Angeles	August 13, 1923	Los Angeles Times	August 15, 1923
Fullerton, Oscar J.	Los Angeles	October 7, 1923	Bureau of Vital Statistics	November 21, 1923
Furlong, M. G.	Norwalk, Ohio		Palo Alto Times	June 1, 1923
Fullerton, O. J., M. D.	Los Angeles	October 23, 1923	Los Angeles Times	October 25, 1923
Gamble, Gustavus A., D. O.	Salt Lake City		Vol. 81, No. 5, Journal American Medical Association	
Goss, Francis Webster, M. D.	San Francisco	July 10, 1923	San Francisco Examiner	July 11, 1923
Graham, Elizah B., M. D.	Los Angeles	December 11, 1923	Los Angeles Times	December 12, 1923
Grover, Charles M., M. D.	Long Beach	April 12, 1923	Long Beach Telegram	April 13, 1923
Hargrave, Walter, M. D.	Oakland	August 22, 1923	San Francisco Examiner	August 24, 1923
Hinde, Alfred H.	San Diego	November 14, 1923	Vol. 81, No 23, Journal American Medical Association	
Hyde, William, M. D.	San Francisco	November 4, 1923	San Francisco Examiner	November 4, 1923
Keen, Era W., M. D.	Denver, Colorado	September 26, 1923	Los Angeles Herald	September 26, 1923
Kester, Mary Dyson, M. D.	Alhambra	April 26, 1923	Pasadena Star-News	April 30, 1923
King, Arthur W.	San Francisco	September 20, 1923	Bureau of Vital Statistics	
Katcherside, Enoch B.	Los Angeles	October 25, 1923	Bureau of Vital Statistics	November 21, 1923
Lake, Harry C.	Los Angeles		Los Angeles Herald	July 2, 1923
Lawson, T. C.	Long Beach	January 19, 1923	Visalia Times	January 20, 1923

Linebaugh, John A., M. D.	San Francisco	April 10, 1923	Vol. 80, No. 18, Journal American Medical Association	----------
Lowry, Olin J.	Redding	November 6, 1923	Bureau of Vital Statistics	----------
McCall, S. J.	Santa Ana	April 21, 1923	Anaheim Herald	April 22, 1923
McClunney, Thomas P.	Sacramento	March 29, 1923	Sacramento Star	March 30, 1923
McCurtain, Addison, M. D.	Los Angeles	February 20, 1923	Los Angeles Times	February 23, 1923
McGee, Ralph, D. C.	Glendale	August 12, 1923	Burbank Pathfinder	August 14, 1923
Manger, John F.	Los Angeles	September 26, 1923	Bureau of Vital Statistics	----------
Newlon, Wm. Henry	Berkeley	August 30, 1923	Bureau of Vital Statistics	September 28, 1923
Newman, Jewel A.	Los Angeles	November 9, 1923	Bureau of Vital Statistics	----------
Ogg, James W.	Fresno	May 7, 1923	Alameda Times-Star	May 7, 1923
Oliver, W. G.	Los Angeles	March 29, 1923	Los Angeles Times	March 30, 1923
Owen, W. R., M. D.	Los Angeles	January 14, 1923	Vol. 80, No. 6, Journal American Medical Association	----------
Oyler, Phillip H., M. D.	Los Angeles	October 15, 1923	Los Angeles Herald	October 16, 1923
Pardon, Norton Hills	Glendale	February 9, 1923	Glendale Press	February 9, 1923
Plunket, James D.	Pasadena	October 30, 1923	Pasadena Star-News	October 31, 1923
Priestman, John Low	Los Angeles	November 9, 1923	Bureau of Vital Statistics	----------
Raleigh, R. B.	Los Angeles	April 13, 1923	Los Angeles Times	April 16, 1923
Rayburn, I. Willard, M. D.	San Diego	November 19, 1923	Vol. 81, No. 24, Journal American Medical Association	----------
Rose, Dorothy M.	Escondido	May 22, 1923	Escondido Advocate	May 25, 1923
Row, William D.	San Francisco	September 19, 1923	Bureau of Vital Statistics	----------
Satterlee, Dwight, M. D.	Los Angeles	March 21, 1923	Vol. 80, No. 17, Journal American Medical Association	----------
Sherrill, Joe	San Francisco	October 15, 1923	Bureau of Vital Statistics	November 21, 1923
Skinner, Clem W., M. D.	Sonoma	June 18, 1923	Santa Rosa Republican	June 19, 1923
Stevenson, Wm. H.	Los Angeles County	October 27, 1923	Bureau of Vital Statistics	November 21, 1923
Toye, Will, M. D.	Marshfield, Ore.	----------	Napa Journal	August 19, 1923
Tyson, J. Perry	Wadsworth, Nev.	February 16, 1923	San Francisco Examiner	February 17, 1923
White, Mary Bridges, M. D.	Palo Alto	March 17, 1923	Vol. 80, No. 14, Journal American Medical Association	----------
Whitehall, Samuel, M. D.	Los Angeles	April 6, 1923	Vol. 80, No. 18, Journal American Medical Association	----------
Whitney, Charles	Santa Cruz	March 26, 1923	Santa Cruz Sentinel	March 27, 1923
Wilson, Bertha	Monterey Park	August 12, 1923	Bureau of Vital Statistics	September 28, 1923
Wood, Ruth M., M. D.	Los Angeles	----------	Vol. 81, No. 7, Journal American Medical Association	----------

APPLICATIONS PENDING DECEMBER 31, 1923.

Name	Class	Amount	Name	Class	Amount
Aaronson, Charles	C	$90 00	Ito, Misao	F	15 00
Adamkiewicz, Ladislaus L.	A	15 00	Jahr, Elmer M.	BB	15 00
Anderson, Emil B.	C	90 00	Jeffers, Bertrand F.	C	90 00
Anderson, Hyrum A.	C	90 00	Jenison, Andrew J.	C	90 00
Baber, Kenneth P.	A	15 00	Jolderman, Rudolph D.	D	50 00
Baughman, Wm. H.	C	90 00	Jones, Edward M.	BB	15 00
Beline, Friedrich K.	A	15 00	Kane, Evan O'N.	C	90 00
Belyea, George N.	C	90 00	Kesler, Byron L.	C	90 00
Betsuin, Teru	Tr. fee	20 00	Kimbul, Morton S.	A	15 00
Bickford, Frank H.	C	90 00	Kvitrud, Gilbert	C	90 00
Biggers, John A.	A	15 00	Lindberg, Albert W.	C	90 00
Billick, Elmer J.	C	90 00	Lindquist, Arthur L.	C	90 00
Bogen, Emil	A	15 00	Lindsay, Harry C.	A	15 00
Buckley, Wm. S.	C	90 00	Lodge, Edward S.	C	90 00
Brown, Beaumont	C	90 00	Lomer, Elvin M.	BB	15 00
Brown, John R.	C	90 00	MacKenzie, Duncan S.	C	90 00
Carroll, John J.	C	90 00	Markley, Paul L.	C	90 00
Chapman, Thomas E.	C	90 00	Martin, Charles B.	C	90 00
Chaikin, Wm. A.	CE	90 00	Martin, Edward T.	C	90 00
Cheney, Wm. W.	C	90 00	Matson, Ralph C.	C	90 00
Cherney, Irving I.	BB	15 00	Maxson, Eugene S.	A	15 00
Conroy, Hugh H.	C	90 00	Middleton, Walter C.	BB	15 00
Conway, Henry A.	A	15 00	Millsap, Roy	C	90 00
Cook, W. Albert	C	90 00	Miura, Chisako	F	15 00
Cowin, Carl C.	C	90 00	Miura, Chisako	Tr. fee	50 00
Creighton, Samuel S.	D	50 00	Moffatt, George H.	BB	15 00
DeArmond, Richard S.	C	90 00	Morales, Lius F.	A	15 00
Degan, James T.	C	90 00	Movius, Alfred H.	C	90 00
Dibble, Robert B.	C	90 00	Movius, Arthur J.	C	90 00
Dicken, Wm. E.	C	90 00	Mulligan, Harold R.	C	90 00
Diggs, Nicholas A.	C	90 00	Neilson, Norman	BB	15 00
Dorbandt, Jefferson D.	C	90 00	Nixon, John S.	C	90 00
Dudley, Erwin F.	C	90 00	Ochiai, Masao	C	90 00
Duggan, John P.	C	90 00	Osoria, Vasco E.	C	90 00
Duncan, Miles J.	C	90 00	Perrine-Laird, Emma A.	C	90 00
Du Pree, Frederick F.	C	90 00	Pettingell, Daniel H.	C	90 00
Eddey, Wm. F.	BB	15 00	Pitt, Marion G.	C	90 00
Ellsworth, Wm. Q.	C	90 00	Potenti, Caterina	F	15 00
Elmer, Francis E.	C	90 00	Potenti, Caterina	Tr. fee	50 00
Ewing, Fred E.	C	90 00	Press, Harry B.	C	90 00
Fanson, Ethel	A	15 00	Rabinovich, Nechume	F	15 00
Fegen, Solomon	A	15 00	Ragsdale, Edward W.	C	90 00
Fisher, Eugene M.	C	90 00	Reorda, Caterina	F	15 00
Flannery, Joseph J.	C	90 00	Reorda, Caterina	Tr. fee	50 00
Fujita, Ko	Tr. fee	90 00	Rhodes, Robert O.	C	90 00
Gafford, C. M.	C	90 00	Rinehart, Jackson C.	C	90 00
Garton, Will N.	D	50 00	Rodin, Frank H.	A	15 00
Gehrels Ernst	A	15 00	Rosen, Robert	C	90 00
Ghrist, Jennie G.	C	90 00	Roth, Joseph A.	C	90 00
Gieger, Albert J.	D	50 00	Rothwell, Augusta M.	C	90 00
Gordon, Riley A.	C	90 00	Ryan, Wm. J.	C	90 00
Grant, John D.	C	90 00	Sakakura, Chiyo	Tr. fee	20 00
Haas, Frederick J.	C	90 00	Sale, J. Judson	C	90 00
Haase, Wm. M.	BB	15 00	Sanborn, Horace H.	BB	15 00
Hale, Dollie	BB	15 00	Sanford, James R.	A	15 00
Hamilton, Charles	C	90 00	Sasse, Ernest G.	C	90 00
Hamilton, Harriett S.	C	90 00	Scholl, Albert J.	A	15 00
Hammond, James L.	C	90 00	Shawhan, Glen E.	C	90 00
Hazlett, Harry W.	C	90 00	Simmons, Joy V.	BB	15 00
Henderson, Frank R.	A	15 00	Solberg, Arnt A.	C	90 00
Hertzog, Francis C.	C	90 00	Sotel, Constantine I.	C	90 00
Hirokado, Chise	F	15 00	Soutar, Richard G.	C	90 00
Hirokado, Chise	Tr. fee	65 00	Stanley, John M.	D	50 00
Hitchcock, Ernest D.	C	90 00	Stephenson, Thomas J.	C	90 00
Homman, Grace L.	A	15 00	Stiles, Frank N.	C	90 00
Hood, Arthur J.	C	90 00	Stoops, James N.	C	90 00
Hoyt, Walter C.	A	15 00			

APPLICATIONS PENDING DECEMBER 31. 1923—Continued.

Name	Class	Amount	Name	Class	Amount
Summerlin, Harold S.	A	15 00	Welch, Sylvester H.	C	90 00
Take, Nina M.	A	15 00	Westberg, Kristina S.	F and Tr. fee	65 00
Tanaka, Masaji	A	15 00			
Tarpinian, Haroutine A.	A	15 00			
Tedeschi, Gamme	Tr. fee	16 70	Westberg, Kristina S.	Tr. fee	20 00
Tolleson, Clarence C.	C	90 00	Wheeler, Herbert E.	C	90 00
Twining, Warren H.	C	90 00	Wichman, Frederick W.	C	90 00
Vachout, Marie A.	C	90 00	Wichman, G. C.	C	90 00
Van Allen, John P.	C	90 00	Wilson, Grover C.	D	50 00
Van Delden, Lucien J.	A	90 00	Wilson, Robert D.	C	90 00
Van Wagenen, Daniel B.	C	90 00	Woodhull, Clayton G.	C	90 00
Volin, Henri P.	C	90 00	Wyatt, Bert I.	C	90 00
Vollborn, Albert L.	C	90 00	Yamaguchi, Ai	Tr. fee	25 00
Von Steuben, Stephen	A	15 00	Young, William M.	C	90 00
Watanabe, Etsuzo	A	15 00	Yule, William L.	C	90 00
Wedel, James R.	C	90 00			
Weinstein, Zena	C	90 00			$10,611 70

BOARD OF MEDICAL EXAMINERS.

Statement of Expenditures for the Period of January 1, 1923, to December 31, 1923.

Function	Material and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Administration—					
Board members		$1,880 00	$1,385 60		$3,265 60
Secretary		4100 00	1,307 87		5,407 87
Sacramento office—					
Clerical and office	$247 15	5,724 80	80 74	$191 69	6,244 38
Rent			983 95		983 95
Postage			139 50		139 50
Stationery and printing			1,498 48		1,498 48
Telephone and telegraph			230 90		230 90
Freight, cartage and express			63 82		63 82
San Francisco office—					
Clerical and office	70 30	1,610 00	219 36	330 20	2,229 86
Rent			606 00		606 00
Postage			30 00		30 00
Telephone and telegraph			325 69		325 69
Freight, cartage and express			40 84		40 84
Total	$317 45	$13,314 80	$6,912 75	$521 89	$21,066 49
Legal—					
Hearings			$582 51		$582 51
San Francisco branch		$2,239 04	186 80		2,425 84
Northern special prosecutor		400 00	104 38		504 38
Los Angeles branch		1,733 33	168 00		1,901 33
Southern special prosecutor		2,075 00	201 32		2,276 32
Totals		$6,447 37	$1,243 01		$7,690 38
Examinations—					
Interpreters		$115 00	$233 00		$348 00
Examination hall			300 00		300 00
Assistants and watchers		184 00			184 00
Examination expense			1,525 68		1,525 68
Total		$299 00	$2,058 68		$2,357 68

Statement of Expenditures for the Period of January 1, 1923, to December 31, 1923—Continued.

Function	Material and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Investigations, prosecutions and revocations—					
Northern branch—					
Special agents	.....	$3,240 00	$940 04	.....	$4,180 04
Operators	.....	76 00	158 96	.....	234 96
Evidence	.....	.....	14 45	.....	14 45
Special detail operators	.....	.....	.....	.....	.....
Southern branch—					
Special agents	.....	2,961 93	545 59	.....	3,507 52
Operators	.....	.....	.....	.....	.....
Evidence	.....	.....	15 00	.....	15 00
Los Angeles office—					
Clerical and office	$58 71	1,440 00	302 17	$18 90	1,819 78
Postage	.....	.....	6 00	.....	6 00
Rent	.....	.....	1,360 70	.....	1,360 70
Freight, cartage and express	.....	.....	1 65	.....	1 65
Telephone and telegraph	.....	.....	210 53	.....	210 53
Total	$58 71	$7,717 93	$3,555 09	$18 90	$11,350 63
Directory—					
Compilation and revision	.....	$2,415 32	.....	.....	$2,415 32
Publication	.....	.....	$2,513 75	.....	2,513 75
Distribution	$48 50	.....	828 91	.....	877 41
Total	$48 50	$2,415 32	$3,342 66	.....	$5,806 48
Grand total	$424 66	$30,194 42	$17,112 19	$540 79	$48,272 06

BOARD OF MEDICAL EXAMINERS.

Statement of Income for the Period of January 1, 1923 to December 31, 1923.

Examination fees—	
Physicians and Surgeons	$5,280 00
Drugless practitioners	720 00
Chiropodists	325 00
Midwives	110 00
Reciprocity Fees	50,670 00
Army and navy surgeon fees	1,050 00
Tax—	
Annual	15,674 90
Delinquent	1,480 00
Duplicate certificate	38 00
Certification of license	210 00
Change of name	24 00
Fines—	
Northern Department	1,722 20
Southern Department	1,650 00
Northern special prosecutor	600 00
Southern special prosecutor	225 00
Sale of directories	330 85
Translation fees	82 00
	$80,191 95

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ANNUAL REPORT

1924

Board of Medical Examiners

OF THE

STATE OF CALIFORNIA

CHARLES B. PINKHAM, M. D.
Secretary-Treasurer

CALIFORNIA STATE PRINTING OFFICE
JOHN E. KING, State Printer
SACRAMENTO, 1925

36430

BOARD OF MEDICAL EXAMINERS OF THE STATE OF CALIFORNIA.

Members.

PERCY T. PHILLIPS, M.D., *President*	Santa Cruz
HARRY V. BROWN, M.D., *Vice President*	Glendale
CHARLES B. PINKHAM, M.D., *Secretary-Treasurer*	State Building, San Francisco
LEMUEL P. ADAMS, M.D.	Oakland
HARRY E. ALDERSON, M.D.	San Francisco
WALTER BREM, M.D.	Los Angeles
ROBERT A. CAMPBELL, M.D.	Los Angeles
JUNIUS B. HARRIS, M.D.	Sacramento
WILLIAM R. MOLONY, M.D.	Los Angeles
JOHN C. YATES, M.D.	San Diego

Special Officers.

ADOLPHUS BIANCHI, *Chief Counsel*	Kohl Building, San Francisco
HARRY G. HENDERSON, *Special Agent*	State Building, San Francisco
ALBERT CARTER, *Special Agent*	Pacific Finance Building, Los Angeles

LETTER OF TRANSMITTAL

SACRAMENTO, CALIFORNIA, January 2, 1925.

HON. FRIEND WM. RICHARDSON,
Governor of the State of California,
Sacramento, California.

YOUR EXCELLENCY:

Conforming with the provisions of section 2 of the Medical Practice Act of the State of California, Charles B. Pinkham, M.D., Secretary-Treasurer of the Board of Medical Examiners, has the honor of respectfully presenting for your consideration the annual report showing the activities of this branch of the state government for the year 1924.

The financial report for the seventy-fifth fiscal year ending June 30, 1924, shows that the Board of Medical Examiners has successfully operated well within its budget allotment, closing with a goodly balance carried over into the seventy-sixth fiscal year.

Respectfully submitted.

CHARLES B. PINKHAM, M.D.,
Secretary-Treasurer, Board of Medical Examiners.

REPORT OF BOARD OF MEDICAL EXAMINERS, FOR THE YEAR 1924.

MEETINGS.

During the year just closed, the Board of Medical Examiners held three regular meetings. Written examinations as well as oral examination of reciprocity applicants were held at each meeting; *i. e.*, February in Los Angeles, July in San Francisco and October in Sacramento.

Between written examinations, oral examinations, legal hearings and routine business, the Board members have a most busy session of at least four days at each regular meeting.

APPLICATIONS.

California medical teaching institutions continue to graduate a goodly number of well educated doctors of medicine. These applicants for a written examination for a Physician's and Surgeon's certificate, are augmented by a large number of practitioners of medicine from other states that seek the allurements of residence in our glorious state.

The total number of applications filed in 1924 is slightly in excess of those filed in the year 1921, but less than 1922 or 1923. However, there were more graduates from medical colleges who filed applications for a written examination in 1924 than in any prior year. Reciprocity applications were less than those filed in 1923, although exceeding in number those filed in either of the two prior years.

	Class of Applicant	*Filed 1922*	*Filed 1923*	*Filed 1924*
A.	Physician and surgeon, written	199	206	262
D.	Physician and surgeon, government credentials	37	26	12
AB.	Physician and surgeon, oral, Section 12½			
	Osteopathic	6	0	0
BB.	Drugless practitioner, written			
	Osteopathic	0	0	0
	Chiropractic	83	19	0
C.	Reciprocity, physician and surgeon	442	632	452
CB.	Osteopathic, reciprocity	20	0	0
CBB.	Drugless, reciprocity	14	0	1
CE.	Chiropodist, reciprocity	1	3	2
E.	Chiropodist, written	1	13	14
F.	Midwife, written	28	11	10
	Midwife, reciprocity	0	0	1
		831	910	756

The above table discloses: 1. That the Medical Practice Act requires the Board to conduct written examinations for physicians and surgeons, for drugless practitioners, for chiropodists and for midwives.

2. That provision is made for licensing those presenting satisfactory credentials showing commission in the U. S. A., U. S. N. or U. S. P. H. Service.

3. That applications for certificates to practice in California may be filed on credentials from other states (reciprocity) by physicians and surgeons, drugless practitioners, chiropodists and midwives.

The Osteopathic Act passed at the November, 1922, election took from the Board of Medical Examiners all jurisdiction over graduates of osteopathic schools. After midnight of December 21, 1922, all jurisdiction passed to the Board of Osteopathic Examiners, hence the Board of Medical Examiners can not receive applications from graduates of osteopathic schools. The chiropractic initiative, in effect the same date,

requires graduates from chiropractic schools or colleges to file applications with the Board of Chiropractic Examiners created thereunder, and not with the Board of Medical Examiners.

CERTIFICATES ISSUED.

The total number of certificates issued during 1924 were less than those issued in either of the two previous years, as disclosed by the following table:

CERTIFICATES ISSUED IN 1922, 1923 AND 1924.

	Class of Applicant	*1922*	*1923*	*1924*
A.	Physician and Surgeon:			
	(a) Written examination	198	183	249
	(b) Government credentials	26	18	16
AB.	Physician and surgeon, Section 12½	0	0	0
C.	Reciprocity—Physician and Surgeon:			
	(a) Direct	322	404	313
	(b) Oral	85	86	62
BB.	Drugless, written	43	3	0
CB.	Reciprocity, osteopathic	24	0	0
CBB.	Reciprocity, drugless	12	0	0
E.	Chiropody, written	1	13	11
CE.	Reciprocity, chiropody	1	2	1
F.	Midwife	14	4	9
	Totals	725	713	661

EXAMINATION STATISTICS FOR 1924.

Physicians and Surgeons, California Schools.

Medical School	*Applicants Passed*	*Applicants Failed*	*Percentages Passed*	*Percentages Failed*
University of California Medical School	43	0	100.0	0
Stanford University Medical School	24	0	100.0	0
*College of Physicians and Surgeons, Medical Department, University of Southern California	1	3	25.0	75.0
College of Medical Evangelists	60	3	95.24	4.76
College of Physicians and Surgeons, S. F.	0	1		100.0
Extra state schools	122	23	84.14	15.86
Totals	250	30	89+	10+

*Closed, 1920. Undergraduate unfinished education completed in another school but diploma of parent school issued.

Chiropody	*Applicants Passed*	*Applicants Failed*	*Percentages Passed*	*Percentages Failed*
California College of Chiropody, San Francisco	11	2	84.62	15.38
Midwives				
Extra state schools	11	7	61.11	38.89

COMPARISON OF APPLICATIONS FILED FOR RECIPROCITY CERTIFICATES WITH THE NUMBER OF CERTIFICATES ISSUED.

	Applications Filed			*Certificates Issued*		
	1922	*1923*	*1924*	*1922*	*1923*	*1924*
Physician and Surgeon (C)	442	602	452	407	490	375
Osteopathic (CB)	20	0	0	24	0	0
Drugless (CBB)	14	0	1	12	0	0
Chiropody (CE)	1	3	2	1	2	1
Midwife (CF)	0	0	1	0	0	1
	477	605	456	444	492	377

The following tabulation by states showing the reciprocity certificates issued to Physicians and Surgeons by the California Board to individuals licensed by other state examining boards manifests that the

majority have been issued to applicants from those states that show the largest registration of practitioners of the healing art:

	1923	1924
Alabama	6	3
Alaska	0	0
Arizona	7	2
Arkansas	1	2
Colorado	10	9
Connecticut	2	0
Delaware	0	0
District of Columbia	1	0
Florida	1	0
Georgia	4	3
Hawaii	3	1
Idaho	12	5
Illinois	77	61
Indiana	20	15
Iowa	27	21
Kansas	19	11
Kentucky	6	4
Louisiana	8	5
Maine	1	1
Maryland	8	7
Massachusetts	8	12
Michigan	6	8
Minnesota	14	16
Mississippi	2	1
Missouri	17	16
Montana	19	19
Nebraska	30	22
Nevada	3	6
New Hampshire	3	1
New Jersey	1	1
New Mexico	1	1
New York	27	26
North Carolina	0	1
North Dakota	10	3
Ohio	15	12
Oklahoma	6	7
Oregon	12	9
Pennsylvania	28	16
Philippine Islands	0	2
Rhode Island	2	1
South Carolina	1	2
South Dakota	8	4
Tennessee	6	7
Texas	14	5
Utah	7	9
Vermont	2	1
Virginia	1	2
Washington	22	8
West Virginia	3	1
Wisconsin	10	5
Wyoming	1	1
Totals	492	375

But nineteen licentiates of the Board of Medical Examiners of California have sought registration in other states during 1924, as against forty-one in 1923, as will be seen by the following list showing the name of the state where registration was sought, and the date California endorsed the application of her licentiate seeking entry in a sister state:

Arkansas—
Holt, Wm. Leland, M.D., March 13, 1924.

Iowa—
Williams, Geoffrey, M.D., April 18, 1924.
Scoles, Hudspeth E., M.D., May 29, 1924.

Michigan—
Kopp, Anna, M.D., March 13, 1924.
Cottrell, Martha S., November 20, 1924.

Minnesota—
Muldoon, Madeline A., October 6, 1924.

Missouri—
Abbott, Le Roy Chas., M.D., January 17, 1924.
Reno, Vincent, M.D., February 28, 1924.

New Jersey—
Bernheim, Louis, M.D., December 3, 1924.

New York—
Hamilton, Gilbert V., M.D., November 20, 1924.

North Dakota—
Seibel, John J., M.D., December 18, 1924.

Ohio—
Higbee, Annie S., M.D., September 11, 1924.
Locke, Charles E., Jr., M.D., November 12, 1924.

Oregon—
Haysmer, Clyde A., M.D., September 25, 1924.

Pennsylvania—
Bailey, John Holeman, M.D., October 3, 1924.

Virginia—

Edwards, Herbert R., M.D., March 27, 1924.

Washington—

Van Orden, Kate P., M.D., July 17, 1924.

Wisconsin—

Crawford, Albert Sturges, M.D., September 18, 1924.
Hager, Benjamin Harry, M.D., September 24, 1924.

HEARINGS.

At each regular meeting, the Board has conducted hearings of complaints filed against those licensed under the Medical Practice Act of this state who have been charged with violation thereof.

Those called before the Board during 1924 and action thereon are as follows:

Name	February meeting	July meeting	October meeting
(b) Adcox, R., M.D.		Revoked July 7	
(e) Berry, John Lafayette, M.D.	Dropped; prior revocation		
(d) Coleman, Stuart, M.D.		Cont'd to October	Cont'd to Feb. '25
(a) Dietsch, Curt O., M.D.		Revoked July 8	
(b) *Dyment, Philip, M.D.		Revoked July 9	
(d) Dutcher, Willis W., M.D.	Guilty		To appear Feb. '25
(d) Fisher, James T., M.D.			Cont'd to Feb. '25
(a) Haigh, Frederick, M.D.	Dismissed Feb. 20		
(e) Holsman, Chas. K., M.D.	Continued	Continued	Cont'd to Feb. '25
(a) Hummel, Heinz Geo. A., M.D.	Revoked Feb. 21		
(d) Kvello, Olaf A., M.D.		Revoked July 10	Pro. Oct. 20, '24
(e) Marc, Robt., M.D.		Continued	Revoked Oct. '23
(d) Macmillan, Hugh Allen, M.D.	Guilty Feb. 19		To appear Feb. '25
(d) Martin, James J., M.D.			Cont'd to Feb. '25
(d) Meredith, Charles, M.D.	Probation one year		
(e) Renwick, Robt., M.D.		Continued	Cont'd to Feb. '25
(d) Rice, Newton J., M.D.			Cont'd to Feb. '25
(b) *Rinaldo, Eugene, M.D.		Revoked July 9	
(e) Sanford, James, D.C.			Cont'd to Feb. '25
(e) Smith, Frank L., M.D.	Revoked Feb. 20		
(a) Stone, August, M.D.	Revoked Feb. 20		
(d) Sturges, Roy L., M.D.		Probation July 8	
(d) Thwaites, Geo. Edwin, M.D.	Revoked Feb. 2		
(e) Viereck, Henry C., M.D.		Revoked July 8	
(d) Wyman, George H., M.D.			Revoked Oct. '23
(b) *Young, Frank P., M.D.			Revoked Oct. '22

*Writ of review pending.

The violations for which the above licentiates were called before the Board of Medical Examiners are classified as follows:

(a) Abortions	4
(b) Diploma Mill conspiracy	4
(c) Habitual Intemperance	1
(d) Narcotic violations	11
(e) Miscellaneous	7
Total	27

Decisions of the Board, following hearing of the evidence, were recorded as follows:

Guilty—certificates revoked	12
Guilty—probation	3
Guilty—no penalty imposed	2
Dismissed	3
Pending	7
Total	27

LEGAL REPORT OF THE NORTHERN DISTRICT—1924.

Violations of Section 17 of the Medical Practice Act.

Name	Location	Date initiated	Disposition
Adgar, Joseph	Oakland	12/3/24	12/7/24. Entered plea of guilty. Sentence suspended for six months. To discontinue practice.
Bing, Lung, alias Hoo Wing	San Francisco	11/14/24	12/19/24. Dismissed.
Bing, Lung, alias Hoo Wing	San Francisco	11/14/24	11/28/24. Dismissed.
Camacho, Manuel	Modesto	4/23/24	6/20/24. Entered plea of guilty. Fine $100.
Cosper, W. L.	Oakland	9/5/24	Pending trial.
Crosse, M.	San Francisco	8/20/24	8/28/24. Dismissed.
Cho, Lau Yit	San Francisco	11/14/24	11/28/24. Dismissed.
Cho, Lau Yit	San Francisco	11/5/23	9/22/24. Acquitted by jury.
Elliott, C. R.	San Francisco	3/4/24	5/5/24. Dismissed.
Elmer, F. E.	San Francisco	2/13/24	10/24/24. Bail ($250) forfeited. Defendant fugitive.
Faivre, J. P.	San Francisco	2/23/24	6/17/24. Entered plea of guilty. Probation two years. To discontinue practice.
Fowler, R. T.	Oakland	8/31/22	Pending trial.
Fowler, R. T.	Oakland	7/21/24	10/29/24. Jury trial. Verdict guilty. Fine $200.
Fritz, Rose S.	San Francisco	2/23/24	8/22/24. Jury trial. Defendant acquitted.
Him, Wong	Oakland	2/1/23	Pending trial.
Him, Wong	Oakland	11/15/24	Pending trial.
Hosmer, E. E.	San Francisco	2/29/24	9/10/24. Entered plea of guilty. Probation granted for two years. Defendant to discontinue practice.
Hum, Chan, alias Dr. Woo	San Francisco	11/14/24	12/6/24. Dismissed.
Karsten, Mildred	San Francisco	3/31/24	4/12/24. Dismissed.
Lampe, W. A.	San Francisco	7/22/24	Pending hearing.
Liscum, Christopher	Castroville	8/7/24	Pending trial.
Lancelle, Rose	Stockton	12/20/23	Proceeding barred by statute of limitations. To be dropped from 1925 calendar.
Lucht, Conrad	San Francisco	2/20/24	Pending trial.
Low, Harry S., alias Dr. Sing	Oakland	2/1/23	Pending trial.
Low, Harry S., alias Dr. Sing	Oakland	11/15/24	Pending trial.
Martinez, Mary	San Francisco	8/18/24	8/25/24. Dismissed.
Martinez, Mary	San Francisco	9/1/24	Defendant fugitive.
McCurdy, Lucy Shirley	Sacramento	11/8/23	Pending hearing. Dist. Atty. of Sacramento Co. refuses to prosecute.
McCurdy, Lucy Shirley	Sacramento	11/9/23	Pending hearing. Dist. Atty. of Sacramento Co. refuses to prosecute.
Mein, L. G., alies Dr. Lapp	Modesto	3/15/24	6/19/24. Entered plea of guilty. Sentenced to pay fine of $200.
Monheit, David A.	San Francisco	4/10/24	6/6/24. Dismissed.
On, Poo	Modesto	5/11/23	4/8/24. Guilty. Appeal taken. 8/24/24. Judgment affirmed. Fine $600. 3 months in county jail.
Okonogi, S.	Fresno	3/13/24	3/17/24. Entered plea of guilty. Sentence suspended for six months.
Rhyan, A.	Santa Cruz	11/7/22	11/17/23. Dismissed on motion of Dist. Atty., defendant having left jurisdiction of court. Board notified 3/14/24.
Roberts, Augusta	Oakland	11/7/24	Pending trial.
Sing, Chan, alias Dr. Woo	San Francisco	3/1/24	10/28/24. Dismissed.
Shan, Jang, alias Chan & Chan	San Francisco	11/14/24	11/28/24. Dismissed.
Steffano, Mary	San Francisco	12/5/24	12/12/24. Dismissed
Steffano, Frank	San Francisco	12/5/24	Pending hearing.
Thwaites, G. E.	Berkeley	8/5/24	Fugitive.
Tschumi, Adolph	San Francisco	3/18/24	9/22/24. Acquitted.
Vernango, Charles	San Francisco	11/9/22	Erroneously appears on 1923 Annual Report as having been initiated on May 8, 1923. Proceedings barred by statute of limitations. To be dropped from 1925 calendar.
Wakanme, S.	Sacramento	11/30/24	Proceedings barred by Statute of Limitations. To be dropped from 1925 calendar.
Wan, Fong	Oakland	11/15/24	Pending trial.
Waites, S. W.	Oakland	11/9/22	Pending trial.
Wagenmann, M.	Stockton	12/20/24	Proceedings barred by statute of limitations. To be dropped from 1925 calendar.
Wharton, Isabelle	San Francisco	3/4/24	3/19/24. Dismissed.
Wong, F. H.	San Francisco	7/19/24	7/30/24. Dismissed.
Wooten, Pony	Fresno	8/14/24	Pending hearing.
Wing, Foo	Oakland	11/15/24	Pending trial.
Wetzel, John F.	San Francisco	11/19/24	12/12/24. Dismissed.

SUMMARY.

Guilty	8
Acquitted	3
Dismissed	16
Pending trial	30
Pending hearing	5
Fugitive	4
Bail forfeitures	1
Dropped from calendar	3
	70
Total fines and bail forfeitures	$1,350 00

On July 25, 1924, indictments were returned charging all of the following individuals with a conspiracy to violate the Medical Practice Act.

These indictments were the result of a special session of the grand jury of San Francisco County, held on July 9, 1924. All of these cases are now pending trial in Department No. 6 of the Superior Court of San Francisco.

Name	*Address*
Adcox, Robert	St. Louis, Missouri.
Alexander, Date R.	Kansas City, Missouri.
Briggs, Waldo	St. Louis, Missouri.
Brinkley, John R.	Medford, Kansas.
Draser, Andrew	Ventura, California.
Dyment, Phillip	Pasadena, California.
Elmer, Francis E.	San Francisco, California.
Harris, E. G.	Los Angeles, California.
Jolly, B. H.	St. Charles, Missouri.
Kenney, Frank J.	Baltimore, Maryland.
Madison, Rodney	Berkeley, California.
McKinley, P. J.	St. Charles, Missouri.
Rhodes, R. O.	Long Beach, California.
Rinaldo, E. J.	Los Angeles, California.
Sachs, W. P.	St. Louis, Missouri.
Sheffsky, A. H. W.	Aberdeen, Washington.
Voight, R. A.	Kansas City, Missouri.
Warburton, James A.	Sacramento, California.
Young, Frank P.	Los Angeles, California.

Violations of Section 14.

(Unprofessional Conduct.)

Name	Offense charged	Disposition
Adcox, Robert	Body of Section. Obtaining license by fraud	Revoked
Dyment, Phillip	Body of Section. Obtaining license by fraud	Revoked
Mace, Robert D.	Subdivision 5, Section 14	Revoked
Rinaldo, E. J.	Body of Section. Obtaining license by fraud	Revoked
Sclaroni, George H.	Subdivision 7-a, Section 14	Reprimanded and dismissed
Thwaites, G. E.	Body of Section. Obtaining license by fraud	Revoked
Warburton, Jas. A.	Body of Section. Obtaining license by fraud	Pending
Wymann, G. H.	Body of Section. Obtaining license by fraud	Revoked
Young, F. P.	Subdivision 3, Section 14	Revoked

Appeals—Criminal.

People vs. Poo On; appeal from judgment of conviction had in trial court. Judgment sustained 8/24/24.

Appeals—Civil.

Grisso vs. Board; pending.

Writs—Superior Court.

Berson vs. Board; mandamus to compel board to admit petitioner to examination. Judgment for petitioner 11/7/24. Appeal to be taken.

Simmons vs. Board; mandamus to compel board to issue license. Judgment for petitioner. Appeal to be taken.

Western College of Chiropractic vs. Board; mandamus to compel board to recognize as "Drugless" institution. Petition withdrawn. Action dismissed 3/13/24.
Young vs. Board; prohibition to restrain board from proceeding in matter of application for revocation of license of petitioner. Judgment for board 10/17/24.
Elliott vs. Board; certiorari to review proceedings had before board, revoking license of petitioner. Judgment for board 9/20/24.

Respectfully submitted.

(Signed) HARRY G. HENDERSON,
Special Agent.

LEGAL REPORT OF SOUTHERN DISTRICT.

LOS ANGELES, California, January 1, 1925.

DEAR DR. PINKHAM:

Submitted herewith is an annual report of the Investigation Department for the Southern District of the Board of Medical Examiners of the State of California for the year ending December 31, 1924.

Cases for Violation State Medical Practice Act, pending January 1, 1924.

(There are omitted from the following list all cases initiated against chiropractors which were included in the 1924 annual report as pending, and in which we have no information of any action having been taken subsequently. The greater part of these omitted cases have for a long time been pending in the Los Angeles Police Court, and request has been made that such of these cases as are pending in said court be dismissed.)

Name of case	Location	Date initiated	Disposition
*Alvarado, Clemente	Monrovia	6/23/21	Pending. Defendant not apprehended.
Caron, Maria	Los Angeles	3/20/22	Dismissed. 11/21/24.
Clements, John Doe	Los Angeles	3/4/22	Pending. Defendant not apprehended.
*Closson, G. M.	Upland	12/8/22	Pending for preliminary examination. Off calendar.
*Creighton, Frank	San Diego	11/13/22	Pending. Defendant not apprehended.
*Creighton, Frank	San Diego	11/13/22	Pending. Defendant not apprehended.
*Creighton, J.	San Diego	11/13/22	Pending. Defendant not apprehended.
*Creighton, J.	San Diego	11/13/22	Pending. Defendant not apprehended.
Dalman, Thekla	Barstow	11/26/23	Dismissed.
Del Conde, John Doe	Los Angeles	12/27/22	Pending. Defendant not apprehended.
*Dick, G. C.	Reedley	8/25/22	Pending for preliminary examination. Off calendar.
*Dominguez, Armando	Corona	9/7/21	Pending for trial. Off calendar.
Gibson, W. C.	Beverly	11/7/23	Not guilty. 2/26/24.
Gibson, W. C.	Los Angeles	11/14/23	Pending. Defendant not apprehended.
Heard, Frances McC.	Los Angeles	6/2/20	Dismissed. 7/16/24.
Johnson, Myrtle S.	Los Angeles	8/9/20	Pending. Defendant not apprehended.
*Lighthall, John Doe	Long Beach	11/10/20	Pending. Defendant not apprehended.
*McCall, T. D. S.	Ludlow	2/8/21	Pending for preliminary examination. Off calendar.
Mancella, J.	Los Angeles	9/21/20	Pending. Defendant not apprehended.
Mancillas, Julio L.	Los Angeles	10/20/21	Pending. Defendant not apprehended.
Mancillas, Julius L.	Belvedere	10/13/23	Pending for preliminary examination. Off calendar.
Mogle, L. R.	Los Angeles	8/17/21	Pending for trial. Off calendar.
Palmer, James F. (alias "Dr. James A. Bennett")	Los Angeles	1/31/23	Pending. Defendant not apprehended.
Powell, Lester J.	Los Angeles	2/20/22	Pending. Defendant not apprehended.
Roberts, G. H.	Los Angeles	11/13/20	Pending. Defendant not apprehended.
Rocha, Jane Doe	Los Angeles	7/28/23	Pending. Defendant not apprehended.
Rosen, J.	Los Angeles	5/21/23	Pending. Bail forfeited.
Rosen, J.	Los Angeles	9/12/23	Pending. Defendant not apprehended.
Saint Elmo, John Doe	Los Angeles	4/11/23	Pending. Defendant not apprehended.
Salgado, Bernarda	Los Angeles	3/16/23	Pending. Defendant not apprehended.
Silveria, Tomas	Redland	8/22/23	Pending. Off calendar.
*Stanley, Mrs. B.	Redlands	3/7/22	Pending for preliminary examination. Off calendar.
Tarney, R. Elliott	Tehachapi	6/5/23	Dismissed. 11/19/24.
Thompson, W. B.	Los Angeles	10/25/21	Pending. Defendant not apprehended.
Von Prillwitz, Otto	Los Angeles	7/10/20	Pending. Defendant not apprehended.
Warner, Mark S.	Los Angeles	6/24/20	Pending. Defendant not apprehended.
Young, Herbert E.	Redlands	3/28/23	Dismissed. 2/11/24.

*No information of any action having been taken during past year.

Cases for Violation State Medical Practice Act. initiated between January 1, 1924, and December 31, 1924.

Name of case	Location	Date initiated	Disposition
Abajian, John M.	Los Angeles	11 8 24	Plead guilty. 11/14/24. $100 or 100 days. Fine paid.
Albrextondare, R. H. W.	Orange	4 3 24	Guilty, 5/8/24. $600 and 6 months. Pending on appeal. Submitted 12 22 24.
Albrextondare, R. H. W.	Pasadena	4 22 24	Pending for preliminary examination. 1 15 25.
Bach, Alfred	Long Beach	1 24 24	Plead guilty 3/31/24. $100 or 50 days. Defendant served 2 days in county jail; paid balance of fine, $94. 4 2 24.
Bazz, Curtis L.	Inglewood	6 24 24	Pending. Defendant not apprehended.
Beber, Martin	Santa Monica	7 23 24	Plead guilty 6/4 24. 60 days. Sentence suspended.
Benoit, Francis	Pasadena	7 29 24	Pending for preliminary examination. Fine paid.
Benjamin, Ray W.	Pasadena	12 8 24	Pending for preliminary examination.
Bingham, Mrs. L. E.	Fresno	10 14 24	Plead guilty 11 7 24. Sentence suspended for six months.
Carmona, Eduarda	El Monte	6 3 24	Plead guilty 7 8 24. $100 or 60 days. Defendant committed to county jail.
Chavez, Max S.	San Diego	9 26 24	Pending. Defendant not apprehended.
Clark, Thomas C.	Burbank	11 17 24	Plead guilty 11/17 24. 60 days. Sentence suspended for two years.
Coon, R. E.	Los Angeles	7 17 24	Pending for trial. Off calendar.
Costello, John A.	Los Angeles	11 26 24	Dismissed. 12/30/24.
Cowan, J. W.	Los Angeles	4 28 24	Pending for trial January 29, 1925.
Crespo, M. A.	Los Angeles	10 3 24	Guilty, 11 12 24. $300 and 120 days. Pending on appeal.
d'Angoise, L. A.	Los Angeles	5 17 24	Pending. Defendant not apprehended.
Dominga, Barela	Belvedere	1 8 24	Pending for preliminary examination. Off calendar.
Dominguez, Armando	Olive	6 5 24	Pending for trial. Off calendar. To be reset.
Fernald, Jane Doe	Los Angeles	9 26 24	Plead guilty, 9 27 24. $100 or 100 days. Fine paid.
Finney, Roy	Los Angeles	2 15 24	Guilty, 4 15 24. $200 or 180 days. Pending on appeal. Continued to 1/5/25.
Ganesu, J. C.	Pasadena	12 5 24	Pending for preliminary examination.
Ganesu, J. C.	Pasadena	12 29 24	Pending for preliminary examination.
Gutieres, Vinsenta	El Monte	8 7 24	Fugitive.
Haas, J. O. F.	Los Angeles	7 30 24	Guilty, 11/17 24. $100 or 100 days. Sentence suspended.
Hummel, Heinz G. A.	Los Angeles	7 12 24	Dismissed. 7 7 24.
Jordan, Archie M.	Los Angeles	11 14 24	Plead guilty, 11 20 24. $200 or 100 days. Sentence suspended for two years.
King, T. J.	Long Beach	11 26 24	Pending for preliminary examination. 1 8/25.
Lima, Victoria	Los Angeles	11 26 24	Pending. Defendant not apprehended.
Limbeck, Anna	El Monte	8 7 24	Plead guilty, 8/8/24. 60 days. Sentence suspended.
Lowell, Mrs. Steve	Orosi	10 14 24	Preliminary examination had 11 6 24. Continued, pending order of the court.
Mancillas, Julio L.	San Diego	9 18 24	Plead guilty, 9 27 24. 20 days in county jail.
Martin, W. L.	Long Beach	10 8 24	Plead guilty, 10 28 24. $100. Fine paid.
Martin, W. L.	Long Beach	10 24 24	Plead guilty, 10 28 24. 60 days. Sentence suspended.
Martinez, M. C.	Los Angeles	12 5 24	Pending for trial. 2/3/25.
Marton, Jules	Los Angeles	10 17 24	Plead guilty, 11/19/24. $100 or 100 days. Fine paid.
Mason, H. S.	Pasadena	12 9 24	Fugitive.
Mathews, H. D.	Santa Monica	5 23 24	Plead guilty, 5/28 24. $100. Fine paid.
Millsap, Roy	Los Angeles	8 7 24	Not guilty, 4 2 24.
Montelano, Rosa	El Monte	8 7 24	Fugitive.
Moreau, M.	Los Angeles	7 27 24	Plead guilty, 5 27 24. $100 or 100 days. Fine paid.
Pfennig, Maria S.	Pasadena	10 27 24	Plead guilty, 11 6/24. 6 months. Sentence suspended two years.
Pottgieser, J. M.	Los Angeles	7 17 24	Plead guilty, 7 18/24. $100 or 100 days. Defendant committed to city jail. Sentence suspended same day.
Reichert, Walter	Pasadena	7 16 24	Plead guilty, 7/16/24. $100. Fine paid.
Sandoval, Olive	Los Angeles	11 21 24	Plead guilty, 12 11 24. $100 or 60 days. Fine paid.
Stewart, Anna B.	Los Angeles	10 17 24	Plead guilty, 10/18/24. $100 and 60 days. Fine paid. Jail sentence suspended.

Cases for Violation State Medical Practice Act, initiated between January 1, 1924, and December 31, 1924—Concluded.

Name of case	Location	Date initiated	Disposiition
Swank, W. S.	Los Angeles	12/19/24	Pending. Defendant not apprehended.
Towne, Frances D.	Inglewood	6/12/24	Plead guilty, 6/12/24. 60 days. Sentence suspended.
Tuey, D. K.	Los Angeles	3/28/24	Plead guilty, 4/9/24. $100 or 100 days. Fine paid.
Tuey, D. K.	Los Angeles	12/27/24	Plead guilty, 12/30/24. $100. Fine paid.
Wing, Tom How	Los Angeles	2/13/24	Plead guilty, 2/14/24. $100 or 100 days. Fine paid.
Young, Herbert E.	San Bernardino	6/9/24	Pending for trial, 1/8/25.

Summary.

	*Cases pending January 1, 1924	Cases initiated between January 1, 1924 and December 31, 1924	Total
Guilty	0	29	29
Not guilty	1	1	2
Dismissed	5	2	7
Pending	31	20	51
Totals	37	52	89

Appeals.

Pending on appeal 3

*(Exclusive of cases initiated against chiropractors. See note on page 1 of this report.)

Fines.

Fines imposed and paid into court January 1, 1924 to December 31, 1924		$1,394 00
Board's percentage	$1,045 50	
Fines imposed January 1, 1924 to December 31, 1924, cases pending on appeal		1,100 00
Total fines imposed January 1, 1924 to December 31, 1924		$2,494 00

Charges of Unprofessional Conduct.

Name of case	Location	Offense charged	Disposition
*Bell, David Reece	Lynwood	Sub. 5, Sec. 14	Guilty, 2/14/23. Judgment suspended. Pending. Off calendar.
*Berry, John Lafayette	Maywood	Sub. 8, Sec. 14	Pending. Off calendar.
*Deacon, George	Pasadena	Sub. 5, Sec. 14	Guilty, 2/14/23. Judgment suspended. Pending. Off calendar.
*Dietsch, Curt O.	Los Angeles	Sub. 1, Sec. 14	License revoked, 7/8/24.
*Dutcher, Willis	Los Angeles	Sub. 5, Sec. 14	Guilty, 2/19/24. Pending judgment.
Fisher, James T.	Los Angeles	Sub. 5, Sec. 14	Continued to February, 1925 meeting. Pending hearing.
Haigh, Frederic	Los Angeles	Sub. 1, Sec. 14	Dismissed, 2/20/24.
*Holsman, Chas. K.	Los Angeles	Sub. 5, Sec. 14	Pending. Continued to February, 1925 meeting.
*Hummel, Heinz G. A.	Long Beach	Sub. 1, Sec. 14	Guilty. License revoked, 2/21/24.
Hurwitz, Leon		Sub. 5, Sec. 14	Pending.
Knox, Chas. Russell	Los Angeles	Sub. 10, Sec. 14	Pending.
*Kvello, O. A.	Hemet	Sub. 5, Sec. 14	License revoked July 10, 1924. Reinstated under terms of probation October 20, 1924.
McGrath, Peter James	Los Angeles	Sub. 10, Sec. 14	Pending.
MacMillan, Hugh Allan	Long Beach	Sub. 5, Sec. 14	Guilty, 2/19/24. Continued to February, 1925 meeting. Pending judgment.
Martin, James J.	Long Beach	Sub. 5, Sec. 14	Continued to February, 1925 meeting. Pending hearing.
*Meradith, C. S.	San Gabriel	Sub. 5, Sec. 14	Guilty, 2/19/24. Granted probation for one year.
Renwick, Robert W.	Los Angeles	Sub. 7a, Sec. 14	Continued to February, 1925 meeting. Pending hearing.
Rice, Newton James	Pomona	Sub. 5, Sec. 14	Continued to February, 1925 meeting. Pending hearing.
Richards, James Wm.	Los Angeles	Sub. 5, Sec. 14	Pending.
Smith, Frank L.	Belvedere	Sub. 6, Sec. 14	Guilty, 2/20/24. License suspended indefinitely.
Steele, Gertrude	Los Angeles	Sec. 14	Pending.
*Stone, Augusta	Los Angeles	Sub. 1, Sec. 14	License revoked, 2/20/24.
*Wright, T. B.	Pasadena	Sub. 5, Sec. 14	Guilty, 2/14/23. Judgment suspended. Pending. Off calendar.

*Pending January 1, 1924.

Violations by Licentiates of the Board of Medical Examiners of State and Federal Laws other than the State Medical Practice Act.

Name of case	Location	Violation	Disposition
Baird, Alfred R.	Long Beach	Violation Wright Act	Plead guilty, 1/23/24. $100 or 100 days. $50 of fine suspended. Def't committed.
*Bryson, Chas. W.	Los Angeles	Violation Corporate Securities Act	Dismissed, 10/6/24.
*Coulthard, George H.	Long Beach	Violation State Poison Act	Dismissed, 1/5/24.
*Coulthard, George H.	Long Beach	Violation State Poison Act	Dismissed, 4/8/24.
*Coulthard, George H.	Long Beach	Violation State Poison Act	Dismissed, 5/5/24.
Fisher, James T.	Los Angeles	Violation Harrison Narcotic Act	Plead guilty, 8/11/24. Fine $1,000.
Freeman, E. M.	Long Beach	Criminal Abortion	Dismissed, 9/23/24.
Freeman, E. M.	Long Beach	Criminal Abortion	Dismissed, 3/29/24.
*Hummel, Heinz G. A.	Long Beach	Criminal Abortion	2/15/24, jury disagreed. 4/21/24, jury disagreed. 5/12/24, jury disagreed. Dismissed, 5/22/24.
*Jenkins, Rayel B.	Los Angeles	Violation Corporate Securities Act	Dismissed, 10/6/24.
Kelso, R. D.	Hawthorne	Violation Harrison Narcotic Act	----------
McAdory, R. J.	Newhall	Violation State Poison Act	Pending.
*Malsbary, George E.	Los Angeles	Violation Harrison Narcotic Act	Dismissed, 10/1/24.
Moore, Thomas P.	Watts	Violation State Poison Act	Pending.
Nevius, John W.	Los Angeles	Violation State Poison Act	Dismissed, 12/12/24.
Northrup, Fred D.	South Pasadena	Criminal abortion	Pending for trial, 1/30/25.
Rice, Newton James	Pomona	Violation Harrison Narcotic Act	Plead guilty, 6/18/24. Fined $2,000.
*Richards, James Wm.	Los Angeles	Violation State Poison Act	Plead guilty, 9/24/23. 180 days in Los Angeles city jail. Pending on appeal.
*Sweet, Edward A.	Long Beach	Violation State Poison Act	Dismissed, 1/26/24.
*Sweet, Edward A.	Long Beach	Violation State Poison Act	Acquitted, 4/7/24.
*Taylor, C. M.	Glendale	Criminal abortion	Dismissed, 2/26/24.
Timme, Arthur R.	Los Angeles	Violation State Poison Act	Acquitted, 5/29/24 on one charge. Three other charges dismissed 12/12/24; defendant agrees to give up his narcotic license on January 1, 1925.
Watanabe, Junsai	Los Angeles	Violation State Poison Act	Guilty, 3/29/24. 180 days. Judgment of lower court reversed on appeal October 31, 1924. 12/3/24, on retrial defendant found not guilty.
*Wood, Lorin F.	Redlands	Passing fictitious check	On motion of Deputy District Attorney case continued indefinitely.
Wyman, George H.	Los Angeles	Violation Harrison Narcotic Act	Sentenced, 10/13/24 to serve three years in Leavenworth Prison.
Wyman, George H.	Los Angeles	Perjury	Pending. Off calendar.

*Pending January 1, 1924.

Respectfully submitted.

(Signed) ALBERT CARTER,
Special Agent.

Segregation of Fines Received in 1924.

North—

1923 Fines Received in 1924.

Hing, Chew, San Joaquin County	$75 00
Wong, Y., San Joaquin County	75 00

1924 Fines Received.

Meiu, L. G., alias Dr. Lapp, Stanislaus County	$150 00
	$300 00

South—

1922 Fines Received in 1924.

Wah, Poo, Kern County	$75 00

1923 Fines Received in 1924.

Chan, G. S., Los Angeles County	$75 00
Coleman, Jos. H., Los Angeles County	75 00
Gibson, W. C., San Diego County	90 00

1924 Fines Received.

Benoit, Francis, Los Angeles	$75 00
Fernald, Jane Doe, Los Angeles	75 00
Mathews, H. D., Los Angeles	75 00
Moreau, M., Los Angeles	75 00
Raitsbach, Walter, Los Angeles	75 00
Tuey, D. K., Los Angeles	75 00
Wing, Tom How, Los Angeles	75 00
	$840 00
Total fines paid	$1,140 00

Fines Due Board.

North—

1920 Fines.

Hook, Charlie, San Francisco	$75 00

1921 Fines.

Wo, Po, San Joaquin County	$75 00

1922 Fines.

Beers, Donald, San Joaquin County	$75 00
Cockerell, Beverly, Redwood City	75 00
Frank, Byron E., Chico	375 00
Tomito, H., Sacramento	75 00

1924 Fines.

Camacho, Manuel, Fresno	$75 00
Fowler, R. Thompson, Alameda	150 00
On, Poo, Stanislaus	450 00
	$1,425 00

South—

1922 Fines.

Greenwood, D. E., San Luis Obispo	$75 00

1924 Fines.

Abajian, John M., Los Angeles	$75 00
Bach, Alfred, Los Angeles	70 50
Martin, W. L., Los Angeles	75 00
Marton, Jules, Los Angeles	75 00
Salzgiver, Olive, Los Angeles	75 00
Stewart, Anna B., Los Angeles	75 00
	$520 50
Total fines due board	$1,945.50

Cost of Enforcement, 1924.

Expenses Special Agents.

Northern District—

January	$32 90
February	96 86
March	171 27
April	129 01
May	87 40
June	52 35
July	22 71
August	110 91
September	86 59
October	19 44
November	102 34
December	42 18
Total for Northern District	$953 96

Southern District—

January	$45 15
February	44 37
March	20 20
April	35 58
May	45 20
June	115 72
July	82 61
August	23 98
September	38 72
October	90 90
November	65 40
December	29 97
Total for Southern District	$637 80
Total	$1,591 76

Change of Name.

Eighteen licentiates of the California Board have recorded their change of name during 1924, and corresponding entries made on our records:

Date	Present name	Former name
February 14, 1924	Adams, Hovsep Garo	Adamian
October 30, 1924	Barnett, Anna F.	Franklin
February 28, 1924	Beetham, Grace S.	Simon
October 30, 1924	Bowles, Ethel H.	Havenner
October 30, 1924	Brown, Isabel D.	De Young
February 28, 1924	Cottrell, Martha S.	Sanderson
July 31, 1924	Davis, Elizabeth J.	Jamieson
February 14, 1924	Fate, Margaret W.	Wilson
October 3, 1924	Franklin, Frances I. K.	Klingberg
January 9, 1924	Franks, Helen Lucille W.	Williamson
February 28, 1924	Heald, Elizabeth S.	Schulze
September 11, 1924	Higbee, Annie E. C.	Carveth
June 26, 1924	Hutchins, Millicent L. H.	Huckins
June 26, 1924	Kronkowski, Casemyra C. S.	Swantek
July 17, 1924	Kulaev, Antonia A. M.	Maximova
February 28, 1924	Mann, Allen Isaac	Isaacman
October 9, 1924	Melson, Madeline M.	Muldoon
December 24, 1924	Steffen, Julia B.	Bopp

DECEASED.

The year 1924 marked a decided increase in deaths of those licensed in the healing art in the State of California as compared with prior years.

In the list below, those names marked with an asterisk indicate the individuals reported as graduates of medical colleges, not licensed to practice in this state:

DECEASED—Continued.

Name	Place of death	Date of death	Publication of death notice	Date of publication
Abrams, Albert, M.D.	San Francisco	1/13/24	San Francisco Chronicle	1/14/24
Adler, Albert S., M.D.	San Francisco	8/28/24	San Francisco Examiner	8/29/24
Allen, Albert A., M.D.	San Francisco	3/5/24	Bureau of Vital Statistics	3/26/24
Armstrong, Eudolphia Conklin, M.D.	Pomona	9/25/24	Pomona Bulletin	9/26/24
Baldwin, Beecher Benj., M.D.	Los Angeles	4/13/24	San Francisco Examiner	4/14/24
Barnes, Wallace Harold, M.D.	San Francisco	9/14/24	San Francisco Call	9/16/24
Bartlett, Lawrence S., M.D.	Chino	8/27/24	Pomona Bulletin	8/28/24
Bassett, Foster W., M.D.	Los Angeles	8/21/24	Los Angeles Herald	8/21/24
Bauter, L. A., M.D.	Redding	6/26/24	Bureau of Vital Statistics	
Beach, George H., M.D.	Los Angeles		Letter from Postmaster	
*Beatty, Elizabeth	Berkeley	7/16/24	Bureau of Vital Statistics	8/21/24
Beckman, Oswald H., M.D.	Glendale	11/28/24	Letter	
Beeners, Jas. W., M.D.	San Bernardino	2/10/24	Vol. 82, No. 10, Journal American Medical Association	
*Berryhill, Thos. A.	Mare Island	6/2/24		
*Bickerdike, R. J.	Los Angeles	8/8/24	Bureau of Vital Statistics	10/7/24
Bishop, Herbert F., M.D.	Los Angeles	7/22/24	Alhambra Advocate	7/24/24
Bixler, Aaron W., M.D.	Decoto	5/17/24	Watsonville Register	5/18/24
*Boal, Varro M.	Monrovia	2/2/24	Vol. 82, No. 10, Journal American Medical Association	
Boggess, Emma B., D.O.	San Francisco	3/24/24	Bureau of Vital Statistics	4/26/24
Bower, Wm. Geo., M.D.	Los Angeles	4/28/24	Bureau of Vital Statistics	5/23/24
Boyes, Edwin J., M.D.	Oakland	7/3/24	Bureau of Vital Statistics	8/21/24
Brook, Harry E., Naturopath	Los Angeles	5/5/24	Hollywood Citizen	5/5/24
*Brown, Jack Winton	Las Animas	10/2/24	Vol. 83, No. 18, Journal American Medical Association	
Brown, James F., M.D.	Riverside	10/10/24	Riverside Enterprise	10/15/24
Brown, Newell J. St., M.D.	California Hot Springs	7/20/24	California Journal of Medicine	9/24
*Brown, W. J.	Tulare	7/20/24	Bureau of Vital Statistics	8/21/24
*Brownfield, Ephriam P.	Monrovia	11/17/24	Monrovia News	11/17/24
Burchard, Edw. A., M.D.	Lodi	3/31/24	Lodi Sentinel	4/1/24
Burress, Walton Todd, M.D.	San Francisco	12/15/23	Vol. 82, No. 2, Journal American Medical Association	1924
Butler, Edw. Allison, M.D.	San Diego	2/31/23	San Diego Union	1/1/24
Butler, Fletcher A., M.D.	San Diego	3/21/24	Bureau of Vital Statistics	4/26/24
Buxton, Lauren Haynes, M.D.	Long Beach	10/5/24	Los Angeles Illustrated Daily News	10/6/24
Carter, Charles, M.D.	Los Angeles	8/13/24	Bureau of Vital Statistics	10/7/24
Cavanagh, Stephen P., M.D.	Petaluma	5/10/24	Petaluma Courier	5/21/24
Chamberlain, Marcus P., M.D.	Santa Cruz	1/11/24	Santa Cruz News	1/11/24
*Chase, Arthur E., D.C.	Los Angeles	9/17/24	San Diego Tribune	9/20/24
*Checver, John	Oakland	2/6/24		
*Childs, Benj. N., M.D.	San Jose	2/27/24	San Jose Mercury	2/28/24
Christal, John, M.D.	San Francisco	9/29/24	San Francisco Examiner	10/1/24
*Christmas, Walter	Pasadena	9/16/24	Bureau of Vital Statistics	
Clark, John R., M.D.	San Francisco	10/13/24	San Francisco Call	10/13/24
Cockrill, Bruce T., M.D.	Santa Rosa	12/28/23	Santa Rosa Republican	12/28/23
*Colladay, Stephen M., M.D.	Pomona	6/10/24	Pomona Bulletin	6/11/24

*Cooke, T. Bates, M.D.	Pasadena	1/22/24	Pasadena Post	1/23/24
Crance, August J., M.D.	Pasadena	10/21/24	Pasadena Star-News	10/22/24
*Crandall, Perry	Merced	12/11/24	Merced Sun	12/13/24
Cross, Samuel N., M.D.	Stockton	10/14/24	Stockton Record	10/15/24
Cunnane, Wm. Bernard, M.D.	Santa Barbara	8/22/24	San Francisco Examiner	8/24/24
*Davis, Edward J., M.D.	Ontario	5/6/24	Vol. 82, No. 25, Journal American Medical Association	
Davis, George W., M.D.	Martinez	2/23/23	Martinez Gazette	3/2/23
Day, Benjamin F., M.D.	Oakland	1/9/24	Bureau of Vital Statistics	
Dennis, Earl Bentley, M.D.	St. Louis, Mo.	4/5/24	Journal American Medical Association, P. 1461	5/3/24
Denison, Mary, M.D.	Redlands	10/4/24	Bureau of Vital Statistics	
*Desvosiers, Joseph Pierre	Colfax	8/3/24	Vol. 83, No. 12, Journal American Medical Association p. 938	
Devitt, Thomas George, M.D.	Montebello	1/8/24	Bureau of Vital Statistics	
Dirks, Charles B., M.D.	Glendale	1/19/24	Los Angeles Times	1/20/24
*Dezitt, P. G.	Los Angeles		Los Angeles Herald	1/14/24
*Dick, A. N.	Woodland	4/12/24	Sacramento Bee	4/12/24
Dickinson, Julius C., M.D.	La Jolla	3/6/24	San Diego Sun	3/7/24
Dixon, Cyrus R., M.D.	Whittier	2/8/24	Whittier News	2/9/24
Dowdall, R. J., M.D.	San Francisco	7/10/24	San Francisco Examiner	7/11/24
*Drennan, Arthur	Emeryville	1/28/24	Oakland Tribune	1/31/24
Dresel, Gustav, M.D.	San Francisco	1/1/24	Santa Rosa Press	1/3/24
Dryer, John L., M.D.	Santa Ana	11/30/24	Los Angeles Times	12/1/24
Dunn, Wm. M., M.D.	Los Angeles	8/16/24	Bureau of Vital Statistics	10/7/24
Easterday, George S., M.D.	Watsonville	3/10/24	Watsonville Pajaronian	3/10/24
*Eddy, Julius H.	Los Angeles	7/24/24	Bureau of Vital Statistics	8/21/24
Edick, Geo. Henry, M.D.	Los Angeles	4/18/24	Bureau of Vital Statistics	5/23/24
Eichler, Alfred, M.D.	San Francisco	8/14/24	San Francisco Examiner	8/15/24
Ellis, Katharyn E. W., M.D.	Bakersfield	2/27/24	Reported by husband	
Ellis, Langdon R., M.D.	San Francisco	6/22/24	San Francisco Examiner	6/23/24
Engelhardt, August E., M.D.	Glendora	11/9/24	Glendora Gleaner	11/21/24
*Ervin, Chas. E.	Los Angeles	7/15/24	Bureau of Vital Statistics	
Fehleisen, Frederick, M.D.	San Francisco	8/28/24	San Francisco Examiner	8/29/24
Fisher, James M., M.D.	Los Altos	10/2/24	San Francisco Call	10/2/24
Fitch, Charles C., M.D.	Visalia	6/18/24	Bureau of Vital Statistics	
Flannery, Joseph J., M.D.	Des Moines, Ia.	11/3/24	Reported by Administrator	
*Force, Jacob L., M.D.	Pasadena	12/12/24	Pasadena Star-News	12/12/24
*Ford, William, M.D.	Hollywood	5/19/24	Hollywood Citizen	5/20/24
*Francis, Thos. Benton	Palo Alto	5/1/24	Vol 82, No. 22, Journal American Medical Association	
Fritcher, Mary G.	Los Angeles	4/1/24	Bureau of Vital Statistics	5/23/24
Gafford, Daniel Mace, M.D.	Long Beach			
*Gafford, Samuel	Long Beach	10/23/24	Long Beach Sun	10/24/24
Gatehouse, Frank C., M.D.	Long Beach	7/29/24	Vallejo Times-Herald	7/30/24
Galsgie, Edward Cecil, M.D.	Reno, Nevada	1/26/24	Vol. 82, No. 8, Journal American Medical Association	
*Gardner, J. H.	Oakland	2/6/24	Bureau of Vital Statistics	
*Garver, John Edward, M.D.	Los Angeles	10/24	Vol. 83, No. 25, Journal American Medical Association	
*Gatewood, Wesley E., M.D.	San Diego	1/23/24	San Diego Union	1/24/24
Godin, Arthur Fuller, M.D.	Los Angeles	7/19/24	Los Angeles Examiner	7/20/24
*Goslin, James A., M.D.	Lomita	10/16/24	Vol. 83, No. 19, Journal American Medical Association	
*Graham, Elijah B.	Los Angeles	12/11/23	Bureau of Vital Statistics	
*Graham, James A.	San Francisco	10/10/24	San Francisco Call	10/14/24

DECEASED—Continued.

Name	Place of death	Date of death	Publication of death notice	Date of publication
Greene, Eva Keith, M.D.	Los Angeles	4/9/24	Los Angeles Herald	4/10/24
Gregg, Robert J., M.D.	San Diego	11/3/24	San Diego Union	11/6/24
*Harris, John Wesley, M.D.	Hollywood	5/9/24	Vol. 82, No. 23, Journal American Medical Association	
Harrison, Samuel I., M.D.	San Francisco	1/6/24	Vol. 82, No. 6, Journal American Medical Association	
Harvey, George W., M.D.	Esquon	11/9/24	Chico Enterprise	11/10/24
Hatch, Frederick W., M.D.	Sacramento	2/25/24	San Francisco Call	2/25/24
*Hayes, Milton W.	San Francisco	6/27/24	Bureau of Vital Statistics	
Hays, Wilfred B., M.D.	San Francisco	3/5/24	Berkeley Gazette	3/6/24
Hayward, Henderson, M.D.	Los Angeles	4/14/24	Bureau of Vital Statistics	5/23/24
*Hefler, Bertha, D.O.	Long Beach	8/10/24	Long Beach Press	8/11/24
*Helmer, Geo. A.	San Francisco	10/16/24	San Francisco Call	10/17/24
Hendricks, Hiram	Pasadena	9/28/24	Bureau of Vital Statistics	
Hennessey, Edwin Zae, M.D.	Napa	4/3/24	Napa Register	4/3/24
*Hibbard, Belmina, D.O.	Los Angeles	11/27/24	Tujunga Record-Ledger	11/28/24
Hill, Wm. H., M.D.	Santa Ana	2/17/24		
Hiller, Frederick, Jr., M.D.	Los Angeles	9/5/24	Vol. 83, No. 15, Journal American Medical Association	
Hoag, Ernest Bryant, M.D.	Los Angeles	6/10/24	Los Angeles Express	6/11/24
Hodkinson, William A., M.D.	Santa Monica	1/28/24	Venice Vanguard	1/29/24
Holton, O. A. R.	Whittier	9/28/24	Bureau of Vital Statistics	
Horine, William H., M.D.	Oklahoma		Reported by Postmaster	
Howard, Joseph Louis, M.D.	Honolulu	12/28/24	San Francisco Call	12/30/24
*Hulett, Sidney Eugene, M.D.	Los Angeles	11/24	Vol. 83, No. 24, Journal American Medical Association	
*Hume, Isabella Drummond	Santa Rosa	3/5/24	Santa Rosa Press-Democrat	3/6/24
*Hurd, Arthur, M.D.	Hollywood	11/19/24	Los Angeles Herald	11/20/24
Hyde, Orra C., M.D.	Oakland	1/10/24	Bureau of Vital Statistics	
*Hyde, Wm. John, M.D.	San Francisco		Vol. 82, No. 7, Journal American Medical Association	
Ivancovich, George, M.D.	Petaluma	11/27/24	San Francisco Examiner	11/27/24
*Jacelyn, Walter C.	San Bernardino	12/26/23	Bureau of Vital Statistics	2/1/24
James, Joseph Wm., M.D.	Sacramento	12/11/24	Sacramento Bee	12/12/24
Joyce, Wm. Anthony, M.D.	Sacramento	8/15/24	Sacramento Bee	8/18/24
Karatsu, Tokumitsu, M.D.	Sacramento	5/24/24	San Francisco Examiner	5/25/24
Kinyon, Henry E., M.D.	Modesto	1/20/24	Modesto News	1/21/24
*Knapp, Charles, M.D.	San Diego	3/29/24	Journal American Medical Association	4/26/24
Kurtz, Joseph, M.D.	Los Angeles	6/22/24	Los Angeles Herald	6/23/24
Landis, Amos J., M.D.	Chico	3/23/24	Sacramento Bee	3/24/24
Lane, Arthur E., M.D.	Long Beach	4/13/24	Bureau of Vital Statistics	5/23/24
Laughlin, Ada M., D.O.	Los Angeles	7/11/24	Los Angeles Times	7/12/24
Lewis, John A., M.D.	Richardson Springs	11/25/24		
Long, Chas. W., M.D.	Los Angeles	7/7/24	Bureau of Vital Statistics	8/21/24
*Lovering, Phillips A.	Mare Island	9/30/24	Vol. 83, No. 18, Journal American Medical Association	
McConnell, Allen B., M.D.	San Francisco	8/8/24	Fresno Republican	8/9/24
*McGaven, Charles Wm., M.D.	Pasadena	8/8/24	Vol. 83, No. 9, Journal American Medical Association	
*McGill, John A.	San Diego	2/10/24	San Diego Union	2/10/24

McKown, Chas. L., M.D.	Oakland	3/21/24	Centerville News	3/29/24
McNutt, Wm. Fletcher, M.D.	San Francisco	1/28/24	San Francisco Call	1/29/24
Magee, Irwin L., M.D.	Venice	5/19/24	Venice Vanguard	5/20/24
*Mann, Lenna	Los Angeles	1/10/24	Bureau of Vital Statistics	
*Marden, Orison Swett, M.D.	Los Angeles	3/10/24	Journal American Medical Association	4/5/24
*Markle, Jasper Newton, M.D.	Anaheim	9/24	Vol. 83, No. 17, Journal American Medical Association	
Marrow, Charles E., M.D.	San Diego	5/22/24	Vol. 82, No. 24, Journal American Medical Association	
Marsh, Ella Marie, D.O.	Long Beach	3/23/24	Bureau of Vital Statistics	4/26/24
Mattice, Albert	Seattle, Wn.	11/29/23		
Menefee, Peter M.	Arcata	5/2/24	Arcata Union	5/8/24
Miller, James D., M.D.	Chicago, Ill.	12/2/24	Los Angeles Herald	12/2/24
Miller, Robert, M.D.	Lodi	10/24/24	Stockton Record	10/25/24
Miller, Samuel B., M.D.	Los Angeles	10/2/24	Vol. 83, No. 17, Journal American Medical Association	
*Moore, Samuel G.	Los Angeles	2/21/24	Bureau of Vital Statistics	
*Morrison, Andrew Malcolm	Los Angeles	2/2/24	Los Angeles Examiner	2/4/24
Mouser, Benj. T., M.D.	Piedmont	3/13/24	Bureau of Vital Statistics	4/26/24
Neel, James Craig, M.D.	San Francisco	9/5/24	San Francisco Examiner	9/6/24
*Nielson, F. A.	Pasadena	1/21/24	Pasadena Post	1/21/24
Nordstrum, Samuel G., M.D.	Hollywood	8/27/24	Vol. 83, No. 13, Journal American Medical Association	
*Norris, Caroline E.	Los Angeles	6/3/24	Bureau of Vital Statistics	
O'Reilly, Thos. Wm., M.D.	Los Angeles	3/20/24	Vol. 82, No. 15, Journal American Medical Association	
*Oeffner, Peter J.	Los Angeles	3/31/24	Bureau of Vital Statistics	4/26/24
*Paine, Albania W.	Los Angeles	9/4/24	Los Angeles Times	9/5/24
Palmer, Charles R., D.O.	Pasadena	12/11/24	Pasadena Star-News	
Parcells, Milton L., D.P.	Calexico	10/14/24	Van Nuys News	10/17/24
*Perkins, Lewis W.	Esparto	11/11/24	Sacramento Bee	11/11/24
*Pettijohn, Abra C.	Long Beach	4/5/24	Bureau of Vital Statistics	5/23/24
Philbrook, Nathan W., D.P.	Los Angeles	12/13/23	Bureau of Vital Statistics	2/1/24
Powers, Luther M., M.D.	Los Angeles	11/1/24	San Francisco Call	11/1/24
Pryor, Fred O., M.D.	Santa Rosa	7/3/24	San Francisco Call	7/3/24
*Rahtjen, Philipp	Pasadena	12/23/24	Los Angeles Examiner	12/24/24
*Raven, Frederick J., M.D.	Los Angeles	6/24/24	San Diego Tribune	6/25/24
Reed, Elgar, M.D.	Chino	2/13/24	Los Angeles Times	2/14/24
Reese, John W., M.D.	Perris	10/18/24	Los Angeles Times	10/19/24
Regensburger, Martin, M.D.	San Francisco	9/12/24	San Francisco Examiner	9/13/24
Renaker, John R., M.D.	Los Angeles	3/19/24	Bureau of Vital Statistics	4/26/24
Rethers, Theodore, M.D.	San Francisco	11/21/24	San Francisco Chronicle	11/22/24
*Reum, Mrs. Andrena	Los Angeles	3/28/24	Bureau of Vital Statistics	4/26/24
Richardson, William W., M.D.	Los Angeles	6/2/24	Los Angeles Times	6/4/24
Robbins, Ona Mae, M.D.	Pekin, China	3/25/24	Vol. 83, No. 3, Journal American Medical Association	
*Roberts, Robt. R.	Napa	9/2/24	Bureau of Vital Statistics	
Rogers, Lee Omar, M.D.	Palo Alto	7/29/24	Palo Alto Times	7/29/24
Ross, Frederick Wm., M.D.	San Francisco	7/2/24	Vol. 83, No. 4, Journal American Medical Association	
Ruggles, Georgie Sackett	Los Angeles	5/23/24	Los Angeles Examiner	5/24/24
Russell, Wilmer W.	Berkeley	1/22/24	Berkeley Gazette	1/22/24
Schallenberger, J.	Chicago, Ill.	5/1/24	Reported by widow	
Scholl, Albert Louis, M.D.	San Francisco	4/4/24	Journal American Medical Association	4/26/24
Schulze, Otto Theodor, M.D.	Napa	8/19/24	Napa Register	8/20/24
*Shaw, Alvin A.	San Francisco	1/17/24	Bureau of Vital Statistics	
Shearer, John W.	Santa Barbara	11/19/24	Santa Barbara News	11/20/24

DECEASED—Continued.

Name	Place of death	Date of death	Publication of death notice	Date of publication
Sheppard, Christopher, M.D.	Ontario	8/11/24	Los Angeles Times	8/12/24
*Shoop, C. I.	Los Angeles	5/11/24	Los Angeles Times	5/13/24
*Smith, John K.	Fresno	3/15/24	Bureau of Vital Statistics	4/26/24
Smith, Samuel F., M.D.	Massachusetts	1/22/23		
Smith, Samuel Franklin, M.D.	Bakersfield	4/3/24	Fresno Republican	4/4/24
Smith, William Fawcett, M.D.	Los Angeles	6/23/24	Sacramento Bee	6/25/24
*Sneve, Haldor, M.D.	San Diego	6/15/24	Vol. 83, No. 2, Journal American Medical Association	
*Sonner, Emil A.	Los Angeles	1/5/24	Bureau of Vital Statistics	
Squire, Herbert A., M.D.	Los Angeles	3/16/24	Vol. 82, No. 15, Journal American Medical Association	
*Staben, J. E., D.C.	Pomona	6/21/24	Los Angeles Times	6/22/24
Stallard, Samuel L., M.D.	Greenwood, N. Y.	2/8/24	American Medical Association	
*Stancell, Reed M.	Los Angeles	9/1/24	Los Angeles Times	9/3/24
*Stockwell, Harry B.	Alameda County	1/19/24	Bureau of Vital Statistics	
*Stolz, Joseph A., D.O.	Los Angeles			
Stone, Nell Eliz. Ford, M.D.	San Francisco	4/22/24	Vol. 82, No. 25, Journal American Medical Association	
Stover, William Miller, M.D.	San Luis Obispo	4/4/24	San Luis Obispo Herald	4/5/24
Stratton, Robt. Thompson, M.D.	Oakland	5/5/24	San Francisco Examiner	5/6/24
*Strawn, Enos K.	Los Angeles	1/17/24	Bureau of Vital Statistics	
Stuckey, Simon Fillmore, M.D.	Mokelumne Hill	3/20/24	Stockton Record	3/24/24
Thompson, Jas. Espe, M.D.	San Francisco	4/11/24	San Francisco Call	4/11/24
Thompson, Jas. Goodwin, M.D.	Oakland	2/17/24	San Francisco Examiner	2/18/24
*Thornton, Augustus W.	San Diego	10/27/24	Vol. 83, No. 22, Journal American Medical Association	
Tooker, Robt. Newton, M.D.	Pacific Grove	1/2/24	Berkeley Gazette	1/4/24
*Turner, Winfield	Thornton	4/21/24	Lodi Sentinel	4/22/24
Underwood, Mato F., M.D.	Decoto	7/29/24	Reported by Masonic Home	10/9/24
Van Denburgh, John, M.D.	Honolulu	10/24/24	San Francisco Examiner	10/25/24
Van Hummel, Quincey	Los Angeles	1/11/24	Bureau of Vital Statistics	
Van Tine, Cochran	Santa Clara	10/27/24	Bureau of Vital Statistics	
Vermilye, Robt. M., M.D.	Glendale	2/6/24		
Walter, Henry F., M.D.	San Francisco	6/23/24	San Francisco Bulletin	6/24/24
Watson, Van Bowen, M.D.	Santa Cruz	12/31/23	Santa Cruz Sentinel	1/1/24
Webster, Isaac Daniel, M.D.	San Diego	10/6/24	San Diego Union	10/7/24
Welges, Lorenz, M.D.	Sacramento	8/29/24	Woodland Mail	8/30/24
Wells, Homer Leonard, M.D.	San Diego	2/6/24	San Diego Union	2/7/24
Whitman, Henry Stafford, M.D.	San Jose	5/15/24	California Journal of Medicine	June 24
Wicherski, Otto G., M.D.	San Diego	1/2/24	San Diego Sun	1/3/24
Williamson, Edward L., M.D.	Berkeley	12/10/24	Berkeley Gazette	12/11/24
*Williams, Elmo F.	Los Angeles	10/9/24	Bureau of Vital Statistics	
Wilson, Foster, M.D.	Pasadena	7/23/24	Bureau of Vital Statistics	
*Wood, Wm. D.	Los Angeles	2/12/24	Bureau of Vital Statistics	

Licensed	158
Unlicensed	73
Total deceased	231

OUR MEDICAL PRACTICE ACT.

In October, 1923, the country was startled to learn the magnitude of the traffic in fraudulent medical credentials, diplomas and state licenses, as disclosed by the St. Louis Star, which financed an energetic reporter named Harry Thompson Brundidge, who, under the name of Harry Thompson, by his purchase of a medical diploma from the National University of Arts and Sciences, St. Louis, Mo., a diploma from the Progressive College of Chiropractic, and a license to practice medicine in the state of Tennessee, unravelled the whole nefarious scheme.

Thompson's story, as related in the St. Louis Star, also in the issue of Collier's Weekly April 5, 12 and 19, 1924, is strikingly interesting from the standpoint of crooked dealings, yet horrifying when considered from the standpoint of human sacrifice, for the result of the traffic was the placing of human lives in the hands of diploma-mill products, many of whom without professional training, are said to have fraudulently obtained in certain states a license to practice as a physician and surgeon.

Where shall we place the blame for the existence of such conditions? Shall we blame (1) the state which permits the incorporation and operation of questionable schools? (2) The laxity of state laws which permit the granting of a license on fraudulent credentials? (3) The cupidity of man, or (4) the carlessness of state officials in enforcing the provisions of its Medical Practice Act?

The fact that such a nefarious scheme could be so universally carried out makes us pause to consider the Medical Practice Act of California, enacted for the protection of the public and for the suppression of the charlatan, of which California has a goodly number.

A model Medical Practice Act has been fully and ably discussed by representatives of the various medical examining boards, the medical authorities and educators, all of whom for years have made an intensive study of the subject. All conclude that it is practically an impossibility to create a model Medical Practice Act that will dovetail into the statutes of each state. It is conceded, however, that there are certain basic principles to be included in all medical acts and on this foundation a satisfactory act may be framed to accord with the statutes of each state.

An ideal medical act should be constructed around six basic features; namely—

(I) Minimum educational standard, both preliminary and professional, required of each applicant for an unlimited license. He who seeks a limited license should be required to have the same minimum of preliminary and the same professional training for two years that is required of the applicant for an unlimited license.

(II) Power of approval over schools seeking to qualify applicants for any form of license or certificate to practice any system of the healing art.

(III) The provisions for the examination of the applicant should be sufficiently searching to test his qualifications.

(IV) Disciplinary authority over those who have been licensed.

(V) Comprehensive provisions for adequate enforcement, with penalties sufficiently severe to effectively stop violation of law.

(VI) Annual reregistration.

California may well feel proud that our Medical Practice Act embraces all the desirable features mentioned. As vulnerable points have been found in our act, the weakness has been corrected by amendment until now we have a law that, despite onslaughts from every angle, has been declared constitutional by some sixteen state and federal Appellate and Supreme Court decisions.

One of the first attacks was *P. L. Crane* vs. *Hiram W. Johnson, Governor* (242 U. S. 339), wherein it was alleged that the Medical Act discriminated between forms of healing the sick and the use of prayer and other drugless methods, and it sought to revoke the equal protection clause of the fourteenth amendment of the constitution of the United States, as an argument for a review of the decree of the District Court of the U. S., Southern District of California, which DENIED AN INTERLOCUTORY INJUNCTION to restrain the enforcement of a State Statute (California) requiring drugless practitioners to have completed a prescribed course of study and thereafter to have passed an examination before obtaining legal authority to practice in this state. The plaintiff appealed and the U. S. Supreme Court affirmed the judgment.

The constitutionality of the act was again attacked in *Ex Parte Chow Juan* (235 Fed. 1014) wherein a chinese herbalist having been convicted of violation of the Medical Act, petitioned the federal court for a writ of habeas corpus, alleging unconstitutionality of the act, claiming:

(1) That the title of the act was defective, but the court ruled that the courts of California have already declared the title valid;

(2) It was further contended that the act was unconstitutional because of its provisions regulating drugless healers, in that it defines the drugless practitioner as one who treats diseases without the use of drugs and without in any manner severing * * * any tissues of human beings, etc., arguing that such practitioners do continuously "sever" the tissues of human beings in their particular mode of treatment.

(3) It was further contended the Act was unconstitutional because it gives to the Board of Medical Examiners the power arbitrarily to determine the fitness of applicants for certificates and the *standard of colleges*—without regard to any standard fixed by the legislature.

(4) That the act interferes with interstate commerce, because it prohibits or unduly burdens the sale of imported herbs.

After a careful consideration of all the legal arguments, the court DENIED THE APPLICATION FOR THE WRIT OF HABEAS CORPUS and thereby sustained the constitutionality of the act.

There are many other decisions establishing the constitutionality of various sections of the act, approximating in all over fifty important decisions, including state and federal, supporting the present Medical Act and its administration by the Board of Medical Examiners.

The California Medical Practice Act has weathered the storm and its constitutionality is well established.

II—APPROVAL OF SCHOOLS.

The power of approval of schools is a vitally essential factor in every medical practice act. Lax corporation laws in the majority of states permit the creation, legal recognition and operation of nondescript schools. In practically every state in the Union, including California,

it is possible to incorporate a "sundown" institution, and without demanding any showing of adequate financial responsibility, physical equipment or teaching personnel, the state grants authority to irresponsible individuals to grind out diplomas of all sorts.

The enactment of laws safeguarding the chartering of medical teaching institutions is quite as important as the enactment of laws that fix the standards of medical licensure.

One of the ringleaders in the "diploma mill" in Missouri boasted he could furnish any one of 640 degrees. Some of these were outright forgeries, while others were signed by dishonest individuals formerly operating questionable medical schools, or by dishonest officials.

The removal of the power of approval from the Medical Practice Act of Missouri by legislative enactment of 1921 is held accountable for the wholesale traffic in medical diplomas recently reported in that state.

Let us present a brief survey of the Missouri situation:

(1) The nefarious traffic of the diploma mill was made public in October 1923;

(2) The questionable medical schools soon thereafter were inspected by the Missouri board;

(3) Attorney General Jesse W. Bartlett is quoted in the *Federation Bulletin* of November, 1923, p. 275, as saying:

> "The State Board of Health has made charges against certain medical schools which are of a most serious nature. If even half of the state board's allegations can be proved, the schools ought to be put out of business. The practices which are alleged are intolerable.
>
> "In order to give the State Board of Health and the defendants an opportunity for placing their evidence fully before the Court, I shall probably file *quo warranto* proceedings asking for the forfeiture of the corporate charters, that form of action being the quickest and most direct. Our action, of course, will be taken promptly."

(4) Jackson (Missouri) grand jury reported in January, 1924, to have indicted:

Date R. Alexander, M.D., secretary and reported owner of the Kansas City College of Medicine and Surgery;

Robert Adcox, M.D., alleged principal in the diploma mill frauds;

Ralph A. Voight, M.D., alleged chief and brains of the diploma mill.

So far as we can learn, other than the conviction of Robert Adcox and the revocation of his Missouri license, there has been no other definite action, so it would seem that the whole affair has been a mere "flash in the pan" so far as the state of Missouri is concerned.

The power of approval of schools incorporated in the California Medical Practice Act will keep from our confines the product of the questionable schools reported in Missouri and other states.

Continuing the consideration of the six basic features of an ideal medical practice act, we will touch upon:

III—EXAMINATIONS.

Some state boards require that a portion of the examination of an applicant shall be at the bedside. We have always felt our examinations sufficiently searching to accurately determine an applicant's

fitness. Our law demands ten questions to be answered in the written examination on each of nine subjects, with a general average of 75 per cent and that the applicant shall not fall below 60 per cent in more than one subject.

IV—CITATIONS.

Section 14 of the California Medical Practice Act sets forth the causes for calling a licentiate before our Board to show cause why his license should not be revoked for unprofessional conduct, and the causes for citation are far more comprehensive than are found in the laws of a majority of the states. One day of each regular meeting of the California Board is set aside for legal hearings, which invariably last until midnight and not infrequently continue to the following day. After hearing the evidence the board either dismisses, places on probation, suspends the license for a specified time or revokes.

Now that the "diploma mill' expose has unearthed the consummate arrogance with which certain licentiates of our state not only defy punishment but glory in their "protection," it is apparent that section 14 must be strengthened by incorporating a subdivision making the "peddling" of fraudulent medical diplomas, etc., a cause for revocation of the right to practice under the Medical Act.

The penalty for selling fraudulent diplomas or other credentials used to obtain the right to practice in this state, must be made a felony rather than a misdemeanor. The public is entitled to protection against the product of those harpies engaged in the wholesale peddling of fraudulent credentials, which, under our present reciprocity law, occasionally allows one with fraudulent credentials to gain the right to practice in California.

V—ENFORCEMENT.

Our law, with one exception, provides sufficient penalties for violation. If the judiciary feel inclined, sentences amply severe to discourage violation may be imposed.

The problems of enforcement are numerous, varying according to the political complexion of each county in our state. In some the authorities are zealously active in enforcing the law, while in other counties we have no success whatever in arousing enforcement officials to even a partial realization of their duty. The game of "passing the buck" played by the authorities in some of our counties would be amusing were it not such a sad reflection on our ideals of government. The problems of enforcement were discussed in the 1920 annual report of the Board of Medical Examiners, published in our 1921 directory.

With all our handicaps we are accomplishing far better enforcement results than many of the other states. "There are states in which there has not been a single prosecution under the Medical Practice Act in years, yet this is not because there are no violations. (*Federation Bulletin*, February 1919, p. 34.) In the same article we read with interest that "in the city of Chicago, Illinois, out of eighty cases brought into court, seventy-eight convictions were had." The secretary of the Michigan board is quoted in the *Federation Bulletin* of August, 1916, as stating "In case of a prosecuting attorney who refuses to take notice of a complaint, the governor writes him a letter and asks why no prosecution is had, and if he does not give a proper reason he is liable to

be dismissed from office, and that has a tremendous influence for good in our state."

VI—ANNUAL REGISTRATION.

Much has been said in favor of annual registration and California may well be proud of her acumen when in 1917 the legislature enacted the provision for the annual reregistration fee of $2. This enactment, for the first time since 1878 when medical licensing became effective in California, provided a means for accurately determining who of the many thousands of licentiates were living and where they could be found. Until 1916 no directory had been published by the California Board of Medical Examiners for years; however, the Medical Society had published an annual directory, which was both inaccurate and non-official. Many names of deceased were carried, as were also the names of individuals who had no license to practice in California, this for the purpose of protecting the "copyright" according to reports. On the other hand, the names of many who were licensed to practice medicine and surgery under the laws of California were omitted. Non-licensed practitioners operated throughout the state, quacks were prevalent and charlatans rampant, because information regarding licentiates was chaotic.

Other states had the same experience.

In 1906 when the American Medical Association began compilation of its directory, many of the state boards were unable to produce lists of legally qualified physicians which were in any way complete, while practically in every state I referred to the Secretary of the Board the names of a large number of physicians reported as being in practice in the state and having been practicing for years, whose names did not appear on their records at all. The discrepancies, errors and omissions in the official records were such as to make the accurate compilation of the first edition of the directory impossible.—(*Federation Bulletin*, February 1919, p. 34.) SUCH A CONDITION AS JUST DESCRIBED IS NOT POSSIBLE IN STATES THAT HAVE AN ANNUAL REGISTRATION LAW.

The advantages of annual registration may be briefly stated as follows:

1. It affords opportunity for keeping constantly in touch with the licensed individuals. An individual once licensed would drift away and never be heard of again were the annual tax not operative. This "loss" of the individual would necessitate carrying thousands of names in a directory, a large proportion of which might be deceased.

2. Annual registration is invaluable as a means of keeping accurate addresses.

3. It enables immediate discovery of individuals who may be practicing on the licenses of deceased.

4. It gives certain control over discreditable practitioners.

5. The annual registration plan is favored by many of the leaders of the medical profession throughout the country who are familiar with the difficulties in stabilizing a medical practice act.

Mr. Francis Shepardson, former director of the Department of Registration, State of Illinois, decried the fact that Illinois did not have an annual registration. He stated that in 1918 there were 29,936 medical men licensed in Illinois, but that the department had no check

on some 17,000 as to whether they were alive or dead; that imposters were using the licenses of dead practitioners; that fakers, quacks, and irregular practitioners were unchecked for the lack of legal machinery. Mr. Shepardson offered as a further argument, "The advantages of an annual registration as an effective weapon for protecting the profession and for aiding in the prosecution of pretenders and offenders." He further states that he had heard but two objections, namely:

> (1) The alleged superior dignity of the medical profession when compared with others, and in answer to this says "as a disinterested layman it is my frank opinion * * * there is absolutely no basis, except perhaps a historic one for such pretension."
>
> (2) The other objection might be the inconvenience of having each year to send a small check in response to official notice from the office of the board. This is hardly a logical objection, inasmuch as practically all of us fulfill the same obligation as members of various civic or fraternal orders.

David Strickler, M.D., president of the Federation of Medical Examining Boards, urges the annual registration of practitioners, stating "in no other way can boards of licensure and registration keep in close touch with its licentiates, which is necessary for their successful supervision."

U. S. Senator Royal Copeland, for several years Health Commissioner of New York and familiar with the difficulties in checking up irregular practitioners, made the statement in the St. Louis *Star* of November 27, 1923, "There can be no certainty of relief from this situation (diploma mill frauds) UNTIL THERE IS A REGISTRATION LAW IN EACH STATE requiring every doctor to register annually. I can not think of any better way to check up on the quacks."

The New York *Medical Journal* is quoted in the *Bulletin* of the Federation of Medical Examining Boards, November, 1922, as strongly urging annual registration.

Delaware, where the plan has been in successful operation for eighteen years, reports the results highly beneficial. (*Federation Bulletin*, 1919, p. 206.)

District of Columbia, Florida, Georgia, Indiana, Iowa, Maryland, Massachusetts, Mississippi, Rhode Island, South Dakota and Wisconsin strongly favor annual registration.

A bill recently defeated in the New York legislature, sponsored by the Medical Society of the state of New York and the State Board of Regents, called for annual registration. This bill, "strongly opposed by certain physicians" arose from the fact that there are hundreds of illegal practitioners reported as practicing in the state of New York without the possibility of accurate check.

Frederick F. Van De Water, writing in the *Ladies Home Journal* of July and August, 1924, on "Fake Doctors," wherein he exposed the diploma mill operations, relates Pennsylvania legislation as follows: "The law provides for the *annual* registration of all licensed physicians in the state. This would make it easy to tell the qualified doctor from the fake. The line of demarcation would be clear. * * *" The article relates New York's attempt (which failed) to pass an annual registration law, which had aroused much protest. "The most fervent objections arising not from the quacks, but from certain physicians of

irreproachable standing. They objected to the measure as an invasion of the sacred rights of the medical fraternity and when they finished dwelling upon these, they say in addition that it would be a nuisance, which only goes to show that the quack is not entirely responsible for the prevalence of quackery. The public, which steadfastly refuses to distinguish between science and fraud, must bear a large share of the burden, and the orthodox physician himself carry a little of its weight." Such is the viewpoint of a disinterested layman.

The ANNUAL REGISTRATION is particularly necessary in California since the creation of the chiropractic and osteopathic boards under the initiative acts of 1922. Each of these acts requires annual registration on payment of a $2 fee. The Osteopathic Board has issued a directory of its licentiates, but so far none has been published by the Chiropractic Board.

A copy of the directory published by the Board of Medical Examiners is mailed gratis to every licentiate who has paid his annual tax, and we are convinced that our 7000 copies so distributed are appreciated, particularly by those who have experienced the inaccuracies of the years preceding the era of California's annual registration.

In 1924 our sale of directories at $2.50 each (just 50 cents more than charged for the inaccurate directories published prior to 1917, when the cost of printing, material and labor was far less than at present) netted $474.50. Among those that purchased the directory of 1924 are city governments for their health work, numerous hospitals, Industrial and Compensation Insurance Commission, over twenty insurance companies, various pharmacies, federal enforcement officers, etc. Surely these can hardly be classed (as mentioned in a recent medical journal) as "dishonest vendors of service and things sold to cure disease."

It would be deplorable should California take a backward step by repealing the annual registration feature of the Medical Practice Act.

LIST OF APPLICATIONS PENDING AS OF DECEMBER 31, 1924.

Name	Class	Amount	Name	Class	Amount
Achard, Herman J	C	$90 00	McAtee, John S	C	90 00
Alexander, John H	A	15 00	McCabe, Fordyce H	C	90 00
Bacon, Martha M	C	90 00	McGillycuddy, Valentine	C	90 00
Bath, Thomas W	C	90 00	Manley, Donald J	C	90 00
Bennett, George D	C	90 00	Marinovich, Peter B	A	15 00
Bennett, Henry R	C	90 00	Martin, Charles B	C	90 00
Blagdon, J. C	A	15 00	Martine, Angeline	C	90 00
Bogart, Walter S	C	90 00	Medigovich, Dushan V	C	90 00
Bonfiglio, John	A	15 00	Middleton, Walter C	BB	15 00
Buckley, Wm. S	C	90 00	Miller, Edward A	C	90 00
Burt, Russell R	C	90 00	Milisap, Roy	C	90 00
Campbell, Le Roy S	A	15 00	Moffatt, George H	BB	15 00
Cherney, Irving I	BB	15 00	Morales, Luis F	A	15 00
Conway, Henry A	A	15 00	Morgan, James O	C	90 00
Crowe, Harold E	A	15 00	Nazarianiz, Gerasim	A	15 00
Cruikshank, Herbert	C	90 00	Neilson, Norman	BB	15 00
David, Nunzio A	A	15 00	Newman, Meyer H	C	90 00
Davidson, Wm. P	C	90 00	Noble, Thomas E	A	15 00
Duchein, Marie E	F	15 00	Otis, Margaret R	C	90 00
Eddey, Wm. F	BB	15 00	Pallais, Enrique	A	15 00
Farnsworth, Merton A	C	90 00	Paul, Socrates J	A	25 00
Frediani, Maria	Tr. fee	40 00	Place, Olney G	C	90 00
Fujita, Ko	Tr. fee	40 00	Plagge, Hajo P	A	15 00
Fujita, Ko	F	15 00	Rakitin, Sergius S	A	15 00
Gafford, Gordon M	C	90 00	Reorda, Caterina	Tr. fee	20 00
Gerhart, Edwin A	C	90 00	Rice, Manuel	A	15 00
Goodwin, Marcus	A	15 00	Sanborn, Horace H	BB	15 00
Graham, Thomas E	C	90 00	Saruwatari, T	Tr. fee	40 00
Grant, Alexander	A	15 00	Saruwatari, T	F	15 00
Green, James	C	90 00	Sasse, Ernst G	C	90 00
Greno, Raphael	C	90 00	Schroyer, Charles T	C	90 00
Haas, Frederick J	C	90 00	Schubert, Alphonse J	A	15 00
Haase, Wm. M	BB	15 00	Shepard, William P	C	90 00
Hale, Dollie	BB	15 00	Sherrill, James W	C	90 00
Hall, Charles C	C	90 00	Shinkin, Lydia J	A	15 00
Hall, Dupree M	C	90 00	Simmons, Joy V	BB	15 00
Hamilton, Charles	C	90 00	Smiley, Henry C	C	90 00
Hammond, James L	C	90 00	Spencer, Frederick B	C	90 00
Haney, Wm. P	C	90 00	Spencer, Walter J	C	90 00
Henderson, Frank R	A	15 00	Stanton, Carol T	A	15 00
Hermanies, Johannes	A	15 00	Stiles, Frank N	C	90 00
Hinkle, Warren I	A	15 00	Stocks, Joseph W	C	90 00
Hirshovitz, Sroel	A	15 00	Sweet, Aquila G	A	15 00
Holby, Charles	C	90 00	Thomas, Jessie E	A	15 00
Holmes, Herman	C	90 00	Timeus, Mina	F	15 00
Hough, Rieta C	C	90 00	Traver, Chauncey M	A	15 00
Hoyt, Walter C	A	15 00	Underhill, Albert J	C	90 00
Hulse, Harrison	C	90 00	Van Sickle, J. R	C	90 00
Irvine-Jones, Edith	A	15 00	Vollmer, Albert M	A	15 00
Ito, Misao	F	15 00	Von Dreden, Henny	BB	15 00
Jahr, Elmer M	BB	15 00	Wahlen, John A	A	15 00
Jones, Edward M	BB	15 00	Watson, Tolbert	C	90 00
Kammann, Henry F	C	90 00	Wicklund, C. A	C	90 00
Kelleyan, Yacob K	A	15 00	Williams, Silas W	C	90 00
Kingsley, Alfred C	C	90 00	Wilson, Ernest	D	50 00
Kogan, Henry A	A	15 00	Wood, Ethel J	A	15 00
Lenahan, Francis E	A	15 00	Woolston, Wesley J	C	90 00
Lindsay, Harry C	A	15 00	Young, William	C	90 00
Lipkis, Abram	C	90 00			
Loomer, Elvin M	BB	15 00	Total		$6,245 00

BOARD OF MEDICAL EXAMINERS.

Statement of Income for the Period of January 1, 1924, to December 31, 1924.

Examination Fees—	
Physicians and surgeons	$6,900 00
Drugless practitioners	20 00
Chiropodists	320 00
Midwives	355 00
Reciprocity fees	38,930 30
Army and navy surgeon fees	800 00
Tax—	
Annual	22,015 37
Delinquent	1,540 00
Duplicate certificate	40 00
Certification of license	112 12
Change of name	36 25
Fines—	
Northern Department	300 00
Southern Department	840 00
Sale of directories	474 50
Translation fees	450 00
Sale of equipment	15 00
Abatement of prior year's expenditures	8 75
Total	$73,157 29

BOARD OF MEDICAL EXAMINERS.

Statement of Expenditures for the Period of January 1, 1924, to December 31, 1924.

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
ADMINISTRATION.					
Board members		$2,640 00	$1,411 99		$4,051 99
Secretary		4,300 00	1,259 85		5,559 85
Sacramento office—					
Clerical and office	$240 49	5,346 95	266 98	$216 18	6,070 60
Rent			1,219 79		1,219 79
Postage			547 64		547 64
Stationery and printing			1,141 62		1,141 62
Telephone and telegraph			210 50		210 50
Freight, cartage and express			84 52		84 52
San Francisco office—					
Clerical and office	45 33	1,805 66	542 15	70 85	2,463 99
Postage			35 00		35 00
Telephone and Telegraph			275 50		275 50
Freight, cartage and express			8 52		8 52
Totals	$285 82	$14,092 61	$7,004 06	$287 03	$21,669 52
LEGAL.					
Hearings			$1,849 60		$1,849 60
San Francisco branch		$2,600 00	1,593 38		4,193 38
Totals		$2,600 00	$3,442 98		$6,042 98
EXAMINATIONS.					
Interpreters			$75 00		$75 00
Translation fees			170 00		170 00
Examination hall			265 00		265 00
Assistants and watchers			68 00		68 00
Examination expense			513 40		513 40
Totals			$1,091 40		$1,091 40
INVESTIGATIONS, PROSECUTIONS AND REVOCATIONS.					
Northern branch—					
Special agent		$2,162 73	$953 96		$3,116 69
Southern branch—					
Special agent		1,890 00	637 80		2,527 80
Evidence			4 85		4 85
Los Angeles office—					
Clerical and office	$36 74	1,440 00	295 21		1,771 95
Postage			6 00		6 00
Rent			628 68		628 68
Freight, cartage and express			2 55		2 55
Telephone and telegraph			160 80		160 80
Totals	$36 74	$5,492 73	$2,689 85		$8,219 32
DIRECTORY.					
Compilation and revision	$2 80	$2,084 83			$2,087 63
Publication			$2,882 50		2,882 50
Distribution	41 75		1,034 30		1,076 05
Totals	$44 55	$2,084 83	$3,916 80		$6,046 18
Grand totals	$367 11	$24,270 17	$18,145 09	$287 03	$43,069 40

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VETERANS' HOME OF CALIFORNIA

ANNUAL REPORT

OF

Board of Directors and Officers

Fiscal Year Ended June 30, 1923

Location of Home:
Veterans' Home Postoffice, Napa County, California
Railroad Station, Yountville

CALIFORNIA STATE PRINTING OFFICE
FRANK J. SMITH, Superintendent
SACRAMENTO, 1924

30180

BOARD OF DIRECTORS AND OFFICERS, 1922–1923.

SAMUEL W. BACKUS ..... San Francisco
President and ex officio member of all committees.

HUGH M. BURKE ..... San Francisco
Vice President.

JOHN C. CURRIER ..... San Francisco

B. A. FORSTERER ..... Oakland

E. L. HAWK ..... Sacramento

E. B. HINMAN ..... Redwood City

HARRY E. SPEAS ..... San Francisco

C. DE COLMESNIL ..... Secretary-Treasurer

OFFICIAL AND MEDICAL STAFF, RESIDENT AT VETERANS' HOME, 1922-1923.

COLONEL RUSSELL C. MARTIN ..... Commandant

CAPTAIN S. M. MONTGOMERY ..... Adjutant

C. DE COLMESNIL ..... Secretary-Treasurer

MAJOR JOSEPH J. FRANCE ..... Surgeon

CAPTAIN E. C. BORMAN ..... Chief Engineer

CAPTAIN F. P. BLISS ..... Quartermaster-Commissary

CAPTAIN W. O. MOORE ..... Assistant Surgeon

STANDING COMMITTEES, 1922-1923.

Auditing Committee,
Director HINMAN.

Building and Grounds Committee,
Director CURRIER.

Hospital Committee,
Director FORSTERER.

Library and Amusement Committee,
Director BURKE.

Law Committee,
Director SPEAS.

Supplies Committee,
Director HAWK.

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2—36180

LETTER OF TRANSMITTAL.

Veterans' Home, California,
October 31, 1923.

To the Honorable Friend Wm. Richardson,
Governor of California,
Sacramento, California.

Sir: I have the honor to address to you this, my twenty-second annual report as president of the Board of Directors of the Veterans' Home of California, covering the seventy-fourth fiscal year.

The personnel of the directorate and of the officers of the home has remained unchanged during the fiscal year.

I hand you herewith reports of the commandant, secretary-treasurer, chief surgeon, engineer and adjutant.

On August 1st the directors elected Captain J. P. Edmunds as quartermaster-commissary of the home, a post he is eminently fitted to fill. Due to the change in this position there is no report covering the department as the former incumbent failed to file one.

Owing to lack of funds we have not been able to give the veterans under our care the small luxuries and comforts we would like to furnish them; but, on the whole, they have been well cared for and everything possible done to meet their needs. We are endeavoring to give to these men who offered their lives in the hours of the country's need every care and to do everything possible to make them happy and contented.

The needs of the hospital are increasing, due to the infirmities of advancing years and illness incident to service for the country.

The Civil War veterans grow more feeble as time passes and the younger men in our care are, as a rule, very sick and need the best of food and attention.

We feel that this home is unique in the state and is not to be classed with the institutions. Therefore, it should have special consideration. It is not a penal institute and it is not a hospital for insane, but is a home earned by those who were brave and self sacrificing enough to answe their country's call in the dark days of war.

Respectfully submitted.

Samuel W. Backus,
President, Board of Directors.

REPORT OF COMMANDANT.

From: Russell C. Martin, Colonel-Commandant.
To: President and Members of the Board of Directors.
Subject: Report for fiscal year ended June 30, 1923.

The commandant has the honor to submit the reports of the secretary-treasurer, chief surgeon, chief engineer and adjutant for the fiscal year ended June 30, 1923. These officers cover in detail the work of the different departments for the year. The commandant's report will refer to the general business of the home. This being my second year in command of the home I wish to report that many improvements have been completed with the generous appropriations allotted us by the 1921 legislature. Looking forward to 1923 the legislature appropriated money for two miles of six-inch iron water pipe to complete, or nearly so, our main water line to Rector Canyon, and when this is installed in place of the wooden pipe our water supply will be secure.

Since the fire in July, 1921, we have been without a horse barn but in the 1923 appropriations we have been allowed money to replace the barn.

The feeding of the members has been improved with only slight increase in cost, which tends to contentment. There is a continual change in membership though the total remains about the same. The admission of World War veterans is becoming a vital question. The United States has built and is conducting special hospitals for the care and rehabilitation of those who were disabled either in camp or trench. Specialists are provided who should give these veterans better care than can be given in national or state homes where these extra services and accommodations are not provided. We are asked to provide for this class of patients and as far as the law will allow we accept them and are glad to do so for this home and its officers are provided to assist these veterans.

There has been fine cooperation among the different departments which has resulted in a considerable economy. The accounting department under the secretary-treasurer has been efficiently conducted. The work of the secretary-treasurer has been increased from time to time by the addition of cashing pension checks; the office being a depository and issuing books of deposit for members of the home makes her position one of great responsibility in addition to the work of accounting.

The chief surgeon has conducted the hospital in an able manner and to the satisfaction of those under his care. The hospital is always a source of complaints as the men who are aged and ill are nervous and have many troubles and it requires a great deal of patience to satisfy.

The adjutant has kept the records of the home in excellent condition and has made many changes for the betterment of the service.

The chief engineer has one of the principal parts in the work of the home. The electrical, plumbing, steam heating, etc., coming under his supervision, it has required great study and tact to do the work required. This has been efficiently and satisfactorily done.

During the year there have been many entertainments for the members and employees including the three picture shows per week, and dances for the young people. All national and state holidays have been observed and special services on Memorial Day. At this service veterans of all wars participated. Owing to the enfeebled condition of a majority of our members the memorial services were held at the flag staff on the lawn. The home band has attended all the funeral services and has given daily concerts at the main and hospital band stands. Every member buried in the home cemetery is given a soldier's burial.

Our membership remains about the same total of present and absent as for the past five years. The number of Civil War veterans are decreasing with Spanish War and others increasing. We have only a limited number of World War veterans. It is the wish of the government that World War veterans go to United States disabled veterans' hospitals where special treatment can be given them. The treatment of these veterans is in a different class from old age veterans. During the summer months many aged veterans leave the home on passes or furloughs and return later for the winter. All Civil War veterans receive a pension of $50 per month and a few an invalid pension of $72 which allows them an opportunity to visit their friends during the good weather of summer.

Each succeeding year makes a great change in the physical and mental condition of our members. Not only are a great percentage failing fast physically but mentally and these latter are the most troublesome and require the greatest patience in trying to please them. It does not require any ability or effort to discharge a member of the home for any infraction of the rules but our mission is to try and learn the cause that we may remove the obstacles which confront these people and cause them to commit these errors and make life more pleasant and agreeable for them.

It is hoped the administration of the affairs of the home may be continued by those who originated the idea and have a direct interest in the care of these veterans.

Books are being added to the library every month, which keeps it up to date. The picture shows are a diversion for the members and are well attended.

My association with the board of directors, Board of Control, Engineering Department, State Purchasing Department as well as the official staff of the home has been very pleasant. I wish to thank everyone for their support and assistance and to have them know it is fully appreciated. We hope the coming year will find us united in doing service for these veterans.

Respectfully submitted.

R. C. Martin,
Colonel-Commandant.

REPORT OF SECRETARY-TREASURER.

VETERANS' HOME, October 31, 1923.

To the President and Board of Directors,
Veterans' Home of California.

(Through COLONEL RUSSELL C. MARTIN, *Commandant.*)

GENTLEMEN: I have the honor to submit herewith statement of receipts, disbursements and transactions in this department of the Veterans' Home of California for the seventy-fourth fiscal year, ended June 30, 1923.

Trial Balance, Control Ledger	Schedule 1
Statement of Income	Schedule 2
Statement of Expenditures, State	Schedule 3
Statement of Expenditures, Post Fund	Schedule 4
Statement of Cash Receipts and Disbursements	Schedule 5

Respectfully submitted.

C. DE COLMESNIL,
Secretary-Treasurer.

SCHEDULE 1.

Trial Balance—Control Ledger Accounts as of June 30, 1923.

	Debit		Credit
Funding group:		Printing appropriation, 71st and 72d fiscal years	$123 66
Available appropriated funds	$38,566 51	Printing appropriation, 73d and 74th fiscal years	607 65
		Purchase and installation of boilers, Chap. 483-17	3,779 05
		Repairs, improvements and equipment, Chap. 442-19	779 79
		Repairs, improvements and equipment, Chap. 391-21	17,328 79
		Power house, Chap. 679-21	14,413 75
		Emergency, Resolution No. 68, 72d fiscal year	1,517 76
		Emergency, Resolution No. 3, 73d fiscal year	16 06
Totals	$38,566 51		$38,566 51
Proprietary group:			
Support and subsistence	$112,660 44	Stores pending	$16 05
Care and welfare	55,532 75	Maintenance fund 74th fiscal year	6,122 82
Farming	35,934 20	Claims payable	16,973 67
Maintenance and operation of plant	55,074 87	Income, current fiscal year	327,150 82
General	25,440 54	Departmental income	7,617 54
Additions and betterments	39,585 17	Excess income, prior fiscal year	46,342 06
Stores	17,087 98	Properties, Jan. 1, 1914, to June 30, 1920	96,639 98
Cash sales of purchased goods	906 44		
Maintenance fund 73d fiscal year	27,940 03		
United States aid receivable	15,880 00		
Warrants receivable	16,973 67		
Accounts receivable	206 87		
Revolving fund, cash	1,000 00		
Properties, Jan. 1, 1914, to June 30, 1920	96,639 98		
Totals	$500,862 94		$500,862 94
Post fund group:			
Support and subsistence	$4,833 01	Claims payable	$5,417 81
Care and welfare	12,451 03	Departmental income	4,524 10
General	3,426 69	Income from special deposit	380 29
Post store inventory	1,565 63	Interest earned	1,993 90
Bank, commercial	6,653 17	Post store sales	22,021 77
Purchases, post store	16,427 45	Post fund capital, Jan. 1, 1914, to June 30, 1920	23,035 76
Revolving funds	1,150 00	Income from posthumous account	16,561 79
Properties, Jan. 1, 1914, to June 30, 1920	2,602 74		
Savings accounts	24,825 70		
Totals	$73,935 42		$73,935 42
Members' special deposit fund:			
Bank, commercial	$6,993 27	Members' credits	$30,723 07
Bank, savings	20,729 80		
Revolving fund	3,000 00		
Totals	$30,723 07		$30,723 07

SCHEDULE 2.

Statement of Income for Period July 1, 1922, to June 30, 1923—Seventy-fourth Fiscal Year.

Income		Total
Appropriated:		
Maintenance appropriations, 73d fiscal year	$15,559 05	
Maintenance appropriations, 74th fiscal year	272,772 52	
Special appropriations	3,109 00	
Printing appropriations	1,225 40	
		$292,665 97
United States Aid:		
Quarter ended June 30, 1922	$16,560 00	
Quarter ended September 30, 1922	16,440 00	
Quarter ended December 31, 1922	16,740 00	
Quarter ended March 31, 1923	17,330 00	
		$67,070 00
Departmental:		
Surgical dressings	$29 00	
Clothing refunded	124 75	
Meals	161 50	
Hides	223 71	
Rags, sacks, bones, bottles, barrels	214 93	
Rent	35 00	
Junk	557 25	
Contract goods sold	896 93	
Home product goods sold	3,267 16	
Penalty on poor coal	43 75	
Refundments	93 21	
Calves sold	552 50	
Hogs and pigs sold	1,347 00	
Rebate on shoes repaired	12 50	
Check canceled	7 14	
		$7,566 33
Post Fund:		
Post store gross sales	$22,021 77	
Moving picture gross receipts	4,514 20	
Interest on savings accounts	3,179 69	
Receipts from transportation advances	6 50	
Miscellaneous receipts	3 40	
Income from posthumous account	8,756 29	
		$38,481 85

SCHEDULE 3.

Statement of Expenditures for Period July 1, 1922, to June 30, 1923—
Seventy-fourth Fiscal Year.

	Materials and Supplies	Salaries and Wages	Service and Expense	Property and Equipment	Total
Support and Subsistence:					
Feeding	$45,287 76	$32,800 99	$241 64	$4,089 65	$82,420 04
Clothing	14,827 66	1,003 79	145 50	.....	15,976 95
Housekeeping	1,509 59	3,769 23	110 73	4,105 72	9,495 27
Laundry	1,136 64	3,455 49	59 60	116 45	4,768 18
Totals	$62,761 65	$41,029 50	$557 47	$8,311 82	$112,660 44
Care and Welfare:					
Attendance	.....	$7,113 67	.....	.....	$7,113 67
Medical care	$3,192 59	32,323 29	$1,104 50	$431 29	37,051 67
Personal care	755 36	297 73	.....	.....	1,053 09
Education and religion	.....	72 00	.....	.....	72 00
Amusement and recreation	35 36	7,701 92	.....	21 00	7,758 28
Burials	155 90	2,328 14	.....	.....	2,484 04
Totals	$4,139 21	$49,836 75	$1,104 50	$452 29	$55,532 75
Maintenance and Operation of Plant:					
Maintenance of buildings	$2,991 30	$5,878 47	$0 50	$151 83	$9,022 10
Maintenance of grounds	126 98	7,249 30	14 85	36 96	7,428 09
Light, heat and power	23,925 13	7,591 46	3,936 54	1,923 23	37,376 36
Refrigeration	21 68	925 64	.....	.....	947 32
Water	.....	300 00	1 00	.....	301 00
Totals	$27,065 09	$21,944 87	$3,952 89	$2,112 02	$55,074 87
Farming:					
Dairy	$3,067 40	$1,888 17	$519 05	$169 16	$5,643 78
Farm and orchard	838 82	8,239 96	133 04	287 84	9,499 66
Hog ranch	5,729 46	998 38	2 50	8 88	6,739 22
Poultry ranch	5,195 48	1,727 35	.....	345 70	7,268 53
Vegetable garden	2 95	2,377 69	.....	.....	2,380 64
Stable and tractor	1,080 89	3,054 81	245 61	21 06	4,402 37
Totals	$15,915 00	$18,286 36	$900 20	$832 64	$35,934 20
General:					
Board of directors	.....	.....	$293 83	.....	$293 83
General offices	$1,581 80	$13,740 60	51 84	$279 35	15,653 59
Postage	.....	.....	383 00	.....	383 00
Telephone and telegraph	.....	956 06	682 93	.....	1,638 99
Automobile	1,021 22	2,858 83	725 65	1,578 03	6,183 73
Freight, cartage, and express	.....	.....	50 80	.....	50 80
Stores condemned	40 12	.....	.....	.....	40 12
Stores adjustments	909 08	.....	.....	.....	909 08
Miscellaneous	.....	.....	6 69	280 71	287 40
Totals	$3,552 22	$17,555 49	$2,194 74	$2,138 09	$25,440 54
Total general expenditures	$113,433 17	$148,652 97	$8,709 80	$13,846 86	$284,642 80
Additions and Betterments:					
Structures	.....	.....	.....	$39,585 17	$39,585 17
Grand total expenditures	$113,433 17	$148,652 97	$8,709 80	$53,432 03	$324,227 97

SCHEDULE 4.

Statement of Expenditures, Post Fund, for the Period July 1, 1922, to June 30, 1923—Seventy-fourth Fiscal Year.

	Materials and Supplies	Salaries and Wages	Service and Expense	Property and Equipment	Total
Support and Subsistence:					
Feeding	$4,833 01				$4,833 01
Care and Welfare:					
Attendance		$666 75			$666 75
Medical care			$105 00		105 00
Chapel		551 25	6 00		557 25
Library	$1 50	1,440 00	596 80	$378 54	2,416 84
Entertainment	436 61		586 60	381 35	1,404 56
Picture show	24 13	1,361 50	3,412 07	1,218 00	6,015 70
Billiards and bowling	2 39			1,050 43	1,052 82
Band	7 70				7 70
Burials	30 74		181 67	12 00	224 41
Totals	$503 07	$4,019 50	$4,888 14	$3,040 32	$12,451 03
General:					
Post store	$444 39	$1,815 31	$26 60	$107 11	$2,393 41
Post store purchases	16,427 45				16,427 45
Advance to veterans			16 56		16 56
Freight, cartage and express			458 28		458 28
Surety bond			96 00		96 00
Insurance			348 55		348 55
Miscellaneous			113 89		113 89
Totals	$16,871 84	$1,815 31	$1,059 88	$107 11	$19,854 14
Total post fund expenditures	$22,207 92	$5,834 81	$5,948 02	$3,147 43	$37,138 18

SCHEDULE 5.

Statement of Bank Deposits and Withdrawals for the Period July 1, 1922, to June 30, 1923.

	Balance July 1, 1923	Deposits	Withdrawals	Balance June 30, 1923
General Accounts:				
Bank, commercial		$291,452 60	$291,452 60	
Bank, state		7,566 33	7,566 33	
Bank, revolving fund	$1,000 00			$1,000 00
Post Fund Accounts:				
Bank, commercial	$5,528 84	$35,981 85	$34,857 52	$6,653 17
Bank, savings	15,325 70	12,025 00	2,500 00	24,850 70
Bank, revolving fund	1,050 00	100 00		1,150 00
Trust—Members' Special Deposits:				
Bank, commercial	$6,669 77	$42,694 99	$42,381 48	$6,983 28
Bank, savings	20,729 80			20,729 80
Revolving fund	3,000 00			3,000 00

REPORT OF HOSPITAL.

From: Major J. J. France, Surgeon, Veterans' Home, California.

To: Colonel R. C. Martin, Commandant Veterans' Home, California.

Subject: Annual Report of Hospital for the fiscal year ended June 30, 1923.

The following report is submitted for your approval:

Number of patients in hospital July 1, 1922	135
Number of patients treated during fiscal year 1923	528
Number of patients discharged from hospital during fiscal year 1923	314
Number of patients remaining in hospital at close of fiscal year 1923	143
Number of patients treated at "sick call" (out patients)	12,868
Number of deaths	89
Average age at death of Civil War veterans	78 years
Average age at death of Spanish-American War veterans	60 years

We find in the fiscal year just ending that the men, as a rule, are better physically and a great deal more contented, not withstanding their ages and in many cases their generally enfeebled condition, which is very clearly demonstrated in Wards 5 and 6. This is primarily due to the increasing efficiency of the nurses, attendants and general hospital staff. The turnover in help has been very small compared to other years.

The number of deaths have been decreased by 19. A large number of these, I believe, have been prevented due to proper food and improved sanitary conditions.

I view with a great deal of satisfaction, the personal interest, taken by all those connected with the hospital in their duties relative to all the departments, and especially in the patients.

I wish to thank the board of directors for the loyal support they have given me at all times, also their constant and devoted interest in all things pertaining to the hospital.

J. J. France.

ANNUAL REPORT OF THE ENGINEER'S DEPARTMENT FOR 1922-1923.

General Samuel W. Backus, *President, and the Board of Directors, Veterans' Home of California.*

(Through Colonel Russell C. Martin, *Commandant.*)

Gentlemen: I have the honor to present herewith an annual report of the work performed by the various departments under my supervision as well as the work of the State Department of Public Works, Division of Architecture, for the fiscal year ended June 30, 1923:

OFFICES AND SHOPS.

New Cascade laundry machine installed in laundry; new electric motor installed in Lincoln theater for piano; sink made for carpenter shop; shoe shop reshingled; phone wires in S. P. depot have been insulated; electric light installed in hay loft at horse barn; feeding trough made for hog ranch; card tables made for G. A. R. hall; new door and box for library mail installed in post office; door made for dairy barn and one for paint shop; nine window sash for post store; picture frame for treasurer's office; truck and mixing base for bakery; a supply of plant boxes for florist; table for home chapel; desk and drawing board for adjutant's office; wash tray frame for post office; paint locker for paint shop; 2 meat boards and 6 meat boxes for butcher shop; car step for electric depot; step ladder and saw platform for carpenter shop; 2 lockers for G. A. R. hall; 2 screen doors for post office; packing case for adjutant's office; table for quartermaster's department; record filing case for Lincoln theater; casters placed under altar at G. A. R. hall; new copper slop sink installed at post store and new top placed on counter; new hydrants installed at hog ranch, post office and bowling alley; steam lard rendering kettle installed for new butcher shop; porch at foreman's cottage at chicken ranch screened; screened sleeping porch installed at post office.

BARRACKS AND QUARTERS.

Window and door screens and broom rack made for Company "D"; new lattice work placed at porch of south ward Company "G"; hardwood box made for Company "C"; hat and coat hooks placed in Companies "D" and "F".

RESIDENCES.

Foot stool made and culvert placed at commandant's residence; clothes closet, frame for laundry trays made and window shades made and installed in new residences of plumber and baker; step ladder made

for adjutant's residence; outlet cut in partition, serving shelf installed, table made and skylight screens installed at director's cottage; porch at farm foreman's residence remodeled and enclosed; shed erected in chicken yard at treasurer's residence; posts for new fence placed at chief surgeon's residence; hot water storage tank has been changed to a new location, bread board made and new shelf installed at director's cottage.

HOSPITAL.

Glazed bulletin board made; meat rack and metal guard for temperature regulator made and installed in refrigerating room; new top placed on kitchen range; new diaphragm placed in water regulator in refrigerating plant; electric fans overhauled and repaired where possible; new band stand erected on plot between main building and tubercular ward; work has been started on the installation of a new system of electric lighting in main building.

CARPENTER SHOP.

Seventy-two burial caskets made and a 10'' x 24'' light of glass placed in top of same; all repairs to buildings, etc., made as needed.

PAINT SHOP.

Checker board varnished and glazed for billiard hall; home band stand painted; foreman carpenter's cottage painted and glazed where needed; nine window sash painted and glazed for post store and counter painted and shellacked; table in home chapel painted and enameled; six meat boxes painted for butcher shop; chairs in band stand cleaned and varnished; interior of new laundry painted; three tables painted for post store; truck and mixing base painted for bakery; toilet in Company "A" painted; new band stand at hospital painted; wardrobe in captain's office Company "C" stained and varnished; porch steps at commandant's residence painted; twelve window and two door screens painted for Company "D"; tin roof of toilet at Company "C" given a coat of red lead paint; three screen doors painted for Company "G"; table painted for director's cottage; 245 dining chairs cleaned and varnished and 29 tables and 3 food carriers painted and enameled for main dining room; 83 headboards painted and lettered; 72 burial caskets stained and varnished; 131 lights of glass renewed around camp; repairs to furniture, etc., made as needed as well as all new work painted or stained and varnished where necessary.

TIN SHOP.

Galvanized iron trough made for new laundry; seven tin filing cases for treasurer's office; galvanized iron switch box for engineer's department; galvanized iron sink for baggage room; ten galvanized iron leader heads and galvanized iron chute for pouring concrete for engineer's

department; four lead roof plates, two 2-compartment galvanized iron wash trays made for baker's and plumber's residences; galvanized iron sink for foreman carpenter; two tin scoops for post store; wire shelving for refrigerator for plumber's residence; eight roof safes for new power house; three oil cans for tractor; fireplace shield made and sideboard lined with tin for commandant's residence; flush tank made for engineer's department; new strainer made and installed at septic tanks; sprinkler made for disinfecting can at hog ranch; strips for boiler front and collar for smoke stack made and installed at power house; serving table at director's cottage lined with zinc; spout made for new coffee mill at commissary; oil drip pans made for engine for refrigerating plant; new garbage wagon assembled and cover made for same; shelf and lining placed over sink in new butcher shop; two switch box covers made for engineer's department; five-gallon soup kettle made for director's cottage; 100-foot galvanized iron ridge roll and top ornament made and installed at new band stand at hospital; two 175-gallon soap mixing tanks made for laundry; galvanized iron wash tray made for foreman carpenter's cottage; three covered buckets made for paint shop; special oil can made for picture machine at Lincoln theater; copper strainer made for lard rendering kettle at butcher shop; smoke stacks and stove pipes made for band leader's cottage; blacksmith's, police sergeant's quarters, police quarters, farm foreman's residence, paint shop, adjutant's residence, chief surgeon's residence and cottage at cemetery; ten ½-gallon and one 1-gallon milk can, twelve 2-quart dippers, six flour scoops, thirty-nine garbage cans and twenty-four galvanized iron buckets made for quartermaster's department; two dippers, pie fruit cutter and two flour scoops made for bakery; three dishpans, two steamers, two copper strainers, three large meat pans, twin smoke stacks made and kitchen table covered with zinc for main kitchen; one quarter measure, one sprinkler, twelve large milk cans and milk tank and stand made for the dairy; hopper for refrigerating plant; shelving for meat room; drainage gutters for refrigerating plant; twelve 4-quart galvanized iron buckets; two steam cooker pans, forty-eight soup tureens, two dippers, sterilizer for tuberculosis wards; seven garbage cans; three tin bread boxes; wire shelving for refrigerator; two bake pans; seventy-two transom catches; two copper ladles; two biscuit cutters; eight square milk cans; four mush pans; six skimmers and five galvanized iron junction switch boxes made and pot stool and serving table covered with galvanized iron for hospital; repairs made to tin and ironware as needed.

ICE PLANT.

Three hundred twenty-six thousand, seven hundred twenty pounds of ice made and delivered and refrigeration furnished to meat and storage rooms in butcher shop and for milk rooms.

STATE WORK.

Repairs—Chap. 391-21.

Work Order No. 11.

Two cottages, five rooms and bath, one each for home plumber and home baker, have been erected under this work order, all work on same having been done by day labor; all work completed and cottages are now being occupied.

Work Order No. 13.

Interior painting of Companies "E," "G," "D," "F," "A" and "B," living rooms in administration building, farm foreman and florist's cottages, main dining room and hospital waitresses' quarters, tubercular ward at hospital and power house employees' quarters has been completed; tile roof of home band stand has been repaired; steps at west side of Chabot cottage have been torn out and replaced with new ones; concrete floors have been placed in lavatories in Companies "A," "B" and "D" and fixtures replaced and walls painted; the electric wiring system in the director's cottage has been overhauled and remodeled, wires placed in conduit, new switches placed and new fixtures installed, interior of building painted, wood work and linoleum varnished, plastering repaired where needed and new flooring placed at main entrance; roof of south annex to main dining room has been covered with tin, gutters placed and new down spouts installed; plastering in hospital and barracks has been repaired where needed; new wash bowl installed in Company "G"; steam sterilizer connected up in Ward 3 and concrete runways placed at entrances to Wards 3 and 5 of hospital; fibrestone floors have been laid in kitchen, pantry and hallways and trench dug, connections made and line run for oil supply for new range burner in director's cottage; new motor-driven dry tumbler has been installed in laundry; tin roof at hospital and main dining room waitresses' quarters has been repaired; interior of Lincoln theater painted, ceiling and rafters cleaned and oiled, walls and ceiling of men's toilet painted and seats in hall varnished; floor in G. A. R. hall painted and windows frosted; excavations made and concrete poured for foundations for new band stand at hospital.

Work Order No. 65.

A new automatic refrigerating machine has been installed at hospital, interior of refrigerating rooms painted and enameled, and cement finish placed on steps leading down to machine room.

Work Order No. 186.

Bull pens and corral fence around same have been erected at cow barn; dropping boards, laying boxes, etc., have been installed at new

chicken house; post holes dug, new posts placed and fencing erected for new chicken yards at east side of chicken ranch; posts set and timbers placed for new gate at entrance to chicken yard.

Power House—Chap. 679-21.

Work Order No. 201.

Three new boilers have been set up in power house, replacing boilers that had become unserviceable on account of age and new pumps both for water and fuel oil installed and hot water heating system installed to be used with boiler feed pumps; all boilers have been connected up and placed in service and are working satisfactorily; a concrete sump has been placed under steps at north entrance to Company "A" barracks for return water from steam lines and a motor-driven automatic pump installed to pump return water from sump to receiving tank in power house; new low pressure steam line to north end of camp has been installed in a concrete conduit, pipe laid and covered and top placed on conduit, new air compressor installed in power house for supplying air for automobiles. Excavations have been made in floor of old engine room in power house for a tank to be used for manufacture of ice for home use and tank and coils installed in same; refrigerating plant has been moved to new location in old engine room in power house and same is now in use for the manufacture of ice and for supplying refrigeration to new butcher shop meat and storage rooms and for milk room.

A new reinforced concrete addition has been placed on the north end of power house and is used as a laundry, butcher shop, meat room and storage room for salt meats, milk room, chicken room and a storage room that is being used as a room for lard rendering, all work in connection with this project has been completed and electric driven laundry machinery installed in laundry and same is now operating satisfactorily.

Respectfully submitted.

E. C. Bowman,
Chief Engineer.

REPORT OF THE ADJUTANT.

VETERANS' HOME, July 1, 1923.

To the President and Board of Directors,
Veterans' Home of California.

(Through COLONEL RUSSELL C. MARTIN, *Commandant.*)

GENTLEMEN: I have the honor to submit herewith statement showing statistics of membership of the Veterans' Home of California together with descriptive list of all members present and absent on June 30, 1923, for the fiscal year ended June 30, 1923.

STATISTICS.

Membership of Home June 30, 1922		816
New admissions during the year:		
Survivors of the Civil War	47	
Survivors of the Indian Wars	15	
Survivors of the Spanish-American War	123	
Survivors of the World War	7	
Survivors of the Foreign Service	3	
Total admissions	195	
By readmission	168	
Total gain	363	
Losses during the year:		
By discharge, own request	243	
By discharge, committed to insane asylum	3	
By dropped, absent without leave	18	
By dropped, not renewing furlough	25	
By death	89	
Total loss	378	
Net loss		15
Membership of Home June 30, 1923		801
Segregation as to Wars:		
Civil War		363
Indian Wars		53
Spanish-American War		365
World War		11
Foreign Service		9
Total		801

Average present during the year		552.3
Average present and absent during the year		806
Average absent with leave		250.2
Average absent without leave		3.5
Average sick in hospital (members)		135
Average age of members admitted	years	59.3
Average age of Civil War veterans	years	80.2
Average age of Indian War veterans	years	71
Average age of Spanish-American War veterans	years	55.4
Average age of World War veterans	years	30.2
Average age of Foreign Service veterans	years	59.3
Average age of all living members	years	59.2
Average age of all members dying during the year	years	72.3
Total admissions to June 30, 1923, inclusive		8,312
Highest number present during the year		608
Highest number present and absent during the year		828
Average temporary at post		13.9

Average number sick, with leave, without leave, present, present and absent, whole number cared for, gain and loss, at Veterans' Home of California from June 30, 1890, to June 30, 1923.

During the year ending June 30	Average sick	Absent with leave	Absent without leave	Average present	Average present and absent	Whole number cared for	Gain			Loss					
							By admission	By readmission	Total	By discharge	By summary discharge	By dishonorable discharge	By dropped from roll	By death	Total
1890	25	32	2	20	236	304	136	9	145	42	-----	14	23	17	96
1891	31	49	3	233	279	361	192	17	209	59	-----	5	25	23	112
1892	122	75	7	334	416	542	308	56	364	116	-----	20	68	44	248
1893	163	104	9	411	524	591	228	83	311	123	-----	16	68	32	239
1894	44	48	11	416	475	562	291	114	405	348	-----	30	62	42	492
1895	43	34	6	442	482	516	263	203	466	277	-----	34	51	35	397
1896	48	47	8	553	588	588	275	224	499	300	-----	36	28	51	415
1897	50	40	11	600	651	651	257	198	455	229	25	11	68	42	375
1898	74	51	11	624	686	686	197	189	386	247	47	5	60	30	397
1899	103	48	13	674	735	735	206	246	452	168	17	2	105	51	373
1900	115	66	17	689	772	772	186	218	404	218	19	3	133	68	441
1901	128	70	15	703	788	788	189	225	414	153	10	4	120	74	361
1902	128	71	14	735	820	820	186	199	385	214	43	4	88	60	409
1903	116	104	12	709	825	825	193	201	394	124	59	2	45	76	306
1904	124	141	20	726	887	887	197	175	372	146	37	-----	69	75	327
1905	127	140	25	730	895	895	215	166	381	130	65	1	97	72	365
1906	143	115	11	764	895	895	180	200	380	265	76	1	82	70	494
1907	135	86	6	721	813	813	131	192	323	15	20	2	31	88	326
1908	139	85	10	761	856	856	223	214	437	120	50	3	78	94	345
1909	160	120	10	834	971	971	268	181	449	119	31	6	68	120	334
1910	159	179	13	855	1047	1049	273	164	437	131	20	2	105	86	344
1911	178	228	16	925	1169	1180	324	154	478	275	6	5	69	133	440
1912	208	159	15	982	1156	1164	292	209	501	310	3	1	93	107	514
1913	208	130	10	944	1084	1094	259	278	537	339	13	2	150	120	624
1914	195	117	11	912	1041	1054	294	299	593	321	3	4	102	139	560
1915	214	84	7	972	1063	1068	340	304	644	365	2	3	132	136	638
1916	211	83	8	936	1020	1031	228	247	475	319	-----	-----	101	183	553
1917	208	88	6	878	974	980	244	231	475	333	-----	-----	73	134	540
1918	204	82	7	777	866	871	218	222	440	421	-----	-----	78	110	610
1919	134	73	6	662	701	710	185	277	462	348	-----	-----	64	141	553
1920	117	76	4	598	678	687	152	290	442	264	-----	-----	53	94	411
1921	136	126	3	636	765	799	240	231	471	217	-----	-----	41	96	354
1922	133	196	6	617	819	834	238	182	420	260	-----	-----	41	108	409
1923	135	250	3.5	552	806	821	195	168	363	246	-----	-----	43	89	378

Nativity—	
Native born	5,329
Foreign born	2,983

Nativity of Foreign Born.

Australia	4	Jamaica	1
Austria	25	Mexico	1
Azores	1	New Brunswick	2
Belgium	2	Norway	36
Bohemia	1	Nova Scotia	16
Canada	189	Poland	14
Denmark	67	Porto Rico	1
England	288	Portugal	1
Finland	2	Prussia	27
France	71	Russia	5
Germany	645	Scotland	102
Hawaii	1	South Africa	1
Holland	6	Sweden	102
India	1	Switzerland	51
Ireland	1,293	Wales	14
Italy	5	Scattering	18

Total number admitted, 8,312, and readmitted, 6,953, making a total of 15,265 since the organization of the Home.

Respectfully submitted.

CAPTAIN S. M. MONTGOMERY,
Adjutant.

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Adams, Eugene W.	Private	K, 1st Ore. Inf.	12	Oregon	66	$50 00	Kidney trouble	Mar. 28, 1915
Adams, John C.	Private	M, 21st U. S. Inf.	36	Iowa	43	14 00	Chronic bronchitis	Jan. 25, 1907
Adams, Joseph B.	Private	F, 6th Iowa Inf.	42	Ohio	75	50 00	Age	Sept. 14, 1920
Adams, Stephen T.	Private	H, 1st Miss. M. B. Inf.	11	England	75	50 00	Age	Dec. 8, 1919
Affhauser, Fred	Private	U. S. Marine Corps	60	Massachusetts	55	.....	Rheumatism, chronic	Oct. 22, 1921
Akers, William	Private	A, 154th N. Y. Inf.	34	New York	78	50 00	Age	Mar. 27, 1922
Althoff, James B.	Ord. Seaman	U. S. Navy	12	Illinois	83	50 00	Age	Mar. 1, 1923
Anderson, Andrew	Private	C, 6th Cal. Vol. Inf.	8	Norway	57	12 00	Fracture both arms	Sept. 25, 1913
Anderson, Edward W.	Private	B, 1st N. Y. Vol. Inf.	7	California	45	.....	Neurasthenia	April 6, 1922
Anderson, Louis	Private	E, 6th Cal. Vol. Inf.	7	Norway	55	12 00	Kidney trouble	April 15, 1914
Anderson, Peter	Coxswain	U. S. Navy	36	Sweden	52	15 00	Lumbago	April 27, 1914
Annis, Charles H.	Private	F, 2d Mass. Inf.	11	Massachusetts	63	50 00	Defective eyesight	Aug. 2, 1901
Anspack, Henry F.	Private	I, 7th Cal. Inf.	17	Germany	77	50 00	Nervousness and age	Mar. 13, 1917
Arnold, Carl G.	Private	C, 4th U. S. Inf.	36	Germany	73	20 00	Age	Mar. 27, 1919
Ashenfelder, Frank M.	Private	U. S. Marine Corps	48	Pennsylvania	32	.....	Lumbago	Sept. 18, 1911
Atherton, George B.	Private	G, 18th U. S. Inf.	36	New York	59	18 00	Hernia	Oct. 9, 1912
Avirett, John A.	Sergeant	I, 14th U. S. Inf.	14	Kentucky	57	30 00	Injury to spine	Nov. 18, 1922
Ayers, Hallie W.	Private	Hosp. Corps U. S. A. etc.	31	New York	46	.....	Gastritis	Feb. 17, 1922
Bacigalupi, Charles	Private	G, 6th Cal. Inf.	24	Italy	77	50 00	Injury to shoulder	June 17, 1916
Baer, Robert E.	Private	A, 1st N. D. V. Inf.	16	Minnesota	38	24 00	Injured back	Oct. 28, 1912
Bailey, George	Yeoman	U. S. Navy	3	Rhode Island	74	.....	Age	July 17, 1922
Baker, David	Private	H, 6th U. S. Cav.	36	Ohio	39	.....	Tuberculosis	May 13, 1921
Ball, Thomas P.	Private	D, 152d Ind. Inf.	7	Ohio	66	50 00	Rheumatism	July 30, 1914
Baltz, Henry W.	Private	A, 33d Penn. Militia	4	Pennsylvania	62	50 00	Crippled hand and shoulder	April 27, 1905
Bane, Henry (alias Henry Baines)	Private	F, 8th Cal. Inf.	9	New Jersey	63	50 00	Age	June 27, 1908
Banks, Lee	Private	I, 9th U. S. Cav.	36	Kentucky	43	18 00	Bronchitis	April 12, 1923
Barbour, James	Corporal	H, 6th Cal. V. Inf.	8	Virginia	57	24 00	Paralysis	May 5, 1921
Barker, Charles R.	Private	F, 134th Ill. Inf. etc.	14	Wisconsin	62	50 00	Rheumatism	July 10, 1910
Barnes, Joseph	Private	B, 13th Wis. Inf. etc.	37	Pennsylvania	75	50 00	Lumbago	April 11, 1920
Barney, John	Private	G, 23d U. S. Inf.	14	Illinois	53	.....	Oval prolapse	Jan. 17, 1922
Barron, Frank C.	Private	E, 22d U. S. Inf.	36	Wisconsin	46	15 00	Rheumatism	Dec. 16, 1921
Barowsky, Henry	Private	C, 169th N. Y. Inf.	5	New York	62	50 00	General debility	June 15, 1909
Barry, Michael	Sergeant	K, 1st Mont. V. Inf. etc.	34	Ireland	58	12 00	Rheumatism	Jan. 14, 1922
Bartell, Richard B.	Private	H, 2d U. S. Cav.	60	Denmark	65	17 00	Age	Dec. 9, 1922
Bartlett, Maurice P.	Private	C, 4th U. S. Cav.	14	California	36	12 00	Blind left eye	Sept. 18, 1915

Bates, Edwin D.	Private	B, 24th N. Y. Cav. etc.	42	New York	78	50 00	G. S. W., left hip	Oct. 4, 1920
Bauer, George J.	Private	M, 1st U. S. Cav. etc.	167	Pennsylvania	65	20 00	Mitral and aortic regurgitation	June 8, 1919
Beals, Thomas B.	Private	G, 7th Iowa Cav.	24	Tennessee	78	72 00	Age	April 8, 1921
Beamer, Sobieske	Private	B, 1st Mich. Lt. Art.	21	Michigan	79	72 00	Rheumatism	Sept. 16, 1919
Beatty, Harlan U.	Sergeant	B, Oregon Lt. Art.	4	Pennsylvania	53		Rheumatism	Feb. 22, 1923
Beck, John W.	Private	G, 12th U. S. Inf.	9	Germany	29		Mastoiditis	Sept. 24, 1920
Belk, John C.	Sergeant	D, 14th Kans. Cav.	39	Missouri	66	50 00	Tumor	Oct. 9, 1912
Bellknapp, Seba	Private	H, 37th Wis. Inf. etc.	9	New York	67	50 00	Stomach trouble	May 5, 1914
Bennett, Frank (alias Andrew J. Mann)	Corporal	C, 4th U. S. Vet. V. Inf.	48	Massachusetts	79	50 00	Age	Oct. 11, 1921
Bernero, August J.	Private	F, 20th U. S. Inf.	36	Illinois	47		Broken knee	June 3, 1918
Berry, Cyrus P.	Corporal	B, 5th Maine Inf. etc.	43	Maine	80	50 00	Age	May 19, 1922
Bevert, William L.	Corporal	D, 8th Cal. Inf.	10	Georgia	76	50 00	Blind	July 11, 1911
Bezanson, George A.	Private	E, 1st Tex. V. Inf.	5	Nova Scotia	63		Gall stones	Oct. 24, 1922
Birdsell, John A.	Sergeant	F, 10th Minn. Inf. etc.	44	Canada	59	72 00	Blind and rheumatism	Mar. 11, 1899
Bittner, Louis	Private	D, 1st Nev. V. Inf.	39	Germany	43		General disability	July 8, 1907
Blair, William	Private	Unassigned, 18th U. S. Inf.	36	Scotland	50	12 00	Rheumatism	April 19, 1922
Bliss, Clarence P.	Private	H, 56th Ohio Inf.	13	Ohio	76	50 00	Age	Jan. 16, 1917
Blochlinger, Wilhelm	Private	A, 6th Battn. U. S. Guards	12	Switzerland	62		Rheumatism	June 23, 1922
Blodgett, Charles E.	Private	H, 18th N. H. Inf.	9	Vermont	64	50 00	Broken right arm	June 25, 1911
Bohler, Jacob (alias Barth)	Private	A, 7th N. Y. Inf.	16	Germany	55	72 00	Age	July 24, 1897
Boland, John W.	Private	B, 2d U. S. M. Corps	48	West Virginia	32		Rheumatism	Oct. 1, 1914
Bonifas, John D.	Musician	Band, 8th U. S. Cav.	35	England	82	24 00	Age	April 14, 1923
Boon, Thomas N.	Private	B, 6th U. S. Inf.	36	Missouri	42	24 00	Broken ribs and jaw	Sept. 18, 1915
Borden, George W.	Private	K, 65th N. Y. V. Inf. etc.	27	Rhode Island	37	8 00	Rheumatism	June 11, 1906
Bowles, John J.	Corporal	A, 3d Md. Inf.	37	Maryland	71	50 00	Age	Sept. 4, 1915
Boyd, Hugh	Coal passer	U. S. Navy	39	Ireland	42	15 00	Varicose veins	Oct. 19, 1910
Boyer, Francis	Landsman	U. S. Navy	36	Massachusetts	64	50 00	Age	Dec. 23, 1913
Brackebush, Otto	Private	B, 132d Ind. Inf.	4	Ohio	74	50 00	Age	Oct. 9, 1922
Brady, Thomas	Private	I, 56th N. Y. Inf.	4	New York	71	50 00	Age	Mar. 22, 1917
Bragg, Lemuel L.	Private	A, 32d U. S. V. Inf.	19	Illinois	39	12 00	Malarial fever	Mar. 15, 1914
Brandhorst, William	Private	G, 1st U. S. Inf.	36	New York	48	30 00	Hernia	Nov. 25, 1921
Branick, Charles H.	Or. Seaman	U. S. Navy	46	Maine	52	50 00	Age	May 2, 1894
Branscombe, Matthew	Sergeant	K, 8th U. S. Inf. etc.	191	England	74	20 00	Age	Oct. 10, 1922
Brant, William F.	Private	F, 12th U. S. Inf.	36	Pennsylvania	69	50 00	Age	June 25, 1911
Brantley, Robert L.	Private	B, 81st Ill. Inf.	12	Kentucky	63	50 00	Indigestion	July 13, 1912
Brasher, Robert W.	Private	M, 2d U. S. V. Cav.	6	Nevada	47	24 00	Lame, both legs	Jan. 13, 1917
Braun, Joseph	1st Sergeant	G, 107th Ohio Cav.	25	Germany	84	50 00	Age	April 23, 1923
Briody, Philip	1st Sergeant	A, 69th N. Y. Inf.	27	Ireland	52	50 00	General debility	June 7, 1894
Brophy, John	Sergeant	E, 9th U. S. Inf.	22	Missouri	61	6 00	Rheumatism	Feb. 17, 1922
Brouse, Andrew	Private	F, 2d U. S. Cav.	16	Canada	61	20 00	Kidney trouble	Sept. 19, 1913
Brown, Benjamin	Corporal	Band, 24th U. S. Inf.	34	Missouri	56	30 00	Blind	Jan. 12, 1915

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA—Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Brown, Charles	Private	14th Batty. Mass. L. A.	15	Illinois	78	$72 00	Age	Feb. 26, 1923
Brown, Charles L.	Fireman	U. S. Navy	3	New York	58	12 00	Lumbago	May 12, 1923
Brown, Daniel	Private	F, 1st Cal. Vol. Inf.	15	California	54	18 00	Rheumatism	Sept. 29, 1915
Brown, George E. (alias Geo. E. Wickham)	Sergeant	K, 6th U. S. Cav.	60	England	61		Acute bronchitis	April 7, 1922
Brown, Robert E.	Private	H, 34th U. S. V. Inf.	19	Texas	47	30 00	General debility	Oct. 11, 1919
Brown, Samuel	Private	K, 137th U. S. Col. Inf.	9	Georgia	87	50 00	Age	Feb. 5, 1919
Brown, William H.	Private	Hosp. Corps, U. S. A.	8	Virginia	50	12 00	Rheumatism	Dec. 2, 1922
Browne, Arthur	Gunner's Mate	U. S. Navy	228	Australia	56	12 00	Gastritis	Jan. 21, 1921
Brugere, Paul S.	Private	H, 3d U. S. Art. etc.	108	Louisiana	56	15 00	Nephritis	Dec. 8, 1914
Buchanan, Joseph R.	Private	I, 5th Ill. Cav.	20	Illinois	78	50 00	Age, blind	Jan. 19, 1914
Bullard, William	Sergeant	G, 2d Mass. Cav.	28	England	67	50 00	Lumbago	Feb. 7, 1911
Bundy, William	Private	F, 116th Ind. Inf.	7	Indiana	62	50 00	Stomach trouble	Feb. 5, 1910
Bungard, George	Private	A, 1st Cal. V. H. A.	16	Pennsylvania	63		Rheumatism	Feb. 28, 1916
Burdick, Stephen F.	Corporal	C, 60th N. Y. Inf.	16	New York	67	50 00	Rheumatism, cataracts	Jan. 30, 1906
Burge, Washington B.	Landsman	U. S. Navy	16	North Carolina	64	50 00	Rheumatism	Nov. 21, 1901
Burns, John	Private	E, 32d U. S. V. Inf.	21	Illinois	46	8 00	Partial paralysis	Oct. 24, 1921
Burns, William	Ord. Seaman	U. S. Navy	88	England	38		Malaria	Dec. 16, 1911
Burrman, Albert A.	Private	G, 8th Cal. V. Inf.	7	Holland	62		Age	Nov. 14, 1921
Buskirk, Charles E.	Private	F, 23d U. S. Inf.	19	Pennsylvania	44	12 00	Hernia	June 15, 1922
Byrod, Frederick W.	Private	C, 21st Penn. Cav.	7	Pennsylvania	67	50 00	Rheumatism	July 12, 1906
Cagney, William	Sergeant	A, 2d U. S. Cav.	36	Ireland	65	20 00	Stomach trouble	Feb. 14, 1910
Caldwell, Harvey E.	Sergeant	O, 2d U. S. Art. etc.	72	Missouri	53	18 00	Rheumatism	Sept. 11, 1922
Call, Alfred L.	Private	E, 1st Ill. L. A.	39	Vermont	80	50 00	Age	Aug. 23, 1922
Cameron, John	Oiler	U. S. Navy	72	Scotland	61		Kidney trouble	Jan. 13, 1914
Campbell, William	Sergeant	G, 5th U. S. V. Inf. etc.	31	Connecticut	78	50 00	Age	Feb. 20, 1922
Card, Oren H.	Private	A, 188th Penn. Inf.	12	New York	76	50 00	Chronic rheumatism	Dec. 15, 1919
Carels, John H.	2d Lieut.	E, 82d Penn. Inf.	38	Pennsylvania	81	72 00	Age	April 19, 1912
Carlisle, George W.	Private	B, 15th Ill. Cav.	45	Kentucky	79	50 00	Age	Dec. 20, 1920
Carlston, Lang	Private	H, 1st Idaho V. Inf.	16	Iowa	51	30 00	Tuberculosis	Oct. 8, 1917
Carroll, George H.	Private	H, 20th Mass. Inf.	13	Massachusetts	68	50 00	Lung trouble	July 15, 1895
Carroll, James	Private	K, 35th U. S. V. Inf.	21	California	48		Bronchitis	Jan. 17, 1922
Case, John J.	Corporal	B, 4th Mo. Cav.	37	Missouri	65	50 00	Age	Dec. 21, 1907
Casey, James H.	Bos. Mate	U. S. Navy	156	Massachusetts	58	12 00	Appendicitis	Oct. 28, 1921
Casey, Peter	Corporal	M, 7th U. S. Art.	75	New York	60	18 00	Deafness, left ear	April 21, 1923

Casey, Peter F.	Private	F, 6th Cal. V. Inf.	7	Rhode Island	54		Malaria	Oct. 24, 1921
Cassaday, William A.	Private	K, 10th Ill. Inf.	41	Illinois	71	50 00	Age	Jan. 20, 1911
Chalker, William	Sergeant	K, 1st U. S. Inf.	225	New York	61	20 00	Hernia	Dec. 25, 1912
Chambers, James	Seaman	U. S. Navy	13	Pennsylvania	54	50 00	Loss of left arm	Dec. 23, 1893
Chesley, George A.	Private	U. S. Marine Corps	16	Nebraska	31	24 00	Dislocation right hip	April 20, 1912
Childress, James	Private	A, 34th U. S. V. Inf.	18	Kentucky	69		Age	May 21, 1923
Clark, Charles	Private	M, 1st Wash. V. Inf. etc.	30	Illinois	54	12 00	Kidney disease	June 1, 1923
Clark, Dudley W.	Private	I, 5th Mo. V. Inf.	7	Missouri	45	12 00	Operation on stomach	Dec. 13, 1922
Clark, George W.	Private	D, 2d U. S. Cav.	8	Illinois	49	30 00	Tuberculosis	June 14, 1923
Clark, Henry H.	Private	G, 7th Cal. Inf.	20	Michigan	58	50 00	Rheumatism	Dec. 16, 1903
Claussen, Peter	Private	C, 7th U. S. Cav.	26	Germany	59	6 00	Rheumatism	Nov. 21, 1922
Clayton, Philip	Private	A, 195th Ohio Inf.	10	Virginia	83	72 00	Age	April 10, 1923
Cleland, Frank S.	Private	C, 1st Cal. V. Inf.	17	California	54	12 00	Influenza	May 8, 1922
Cletner, Martin (alias Martin Cubbler)	Private	C, 3d N. J. Cav.	19	Pennsylvania	57	50 00	Lung trouble	Jan. 31, 1901
Cochrane, Charles E.	Private	G, 2d Oregon V. Inf.	15	Pennsylvania	47	18 00	Rheumatism	Oct. 13, 1911
Cole, George E.	Private	E, 4th Mass. Art.	12	Maine	69	72 00	Fracture of leg	June 11, 1915
Collins, Patrick	Private	H, 69th N. Y. V. Inf.	8	Ireland	52		Malaria	Feb. 23, 1922
Combs, George E.	Private	M, 43d U. S. V. Inf.	21	California	44		Blind	Feb. 26, 1923
Conaty, Andrew M.	Private	I, 14th Ill. Inf.	37	England	78	50 00	Age	Sept. 5, 1917
Conery, Reuben P.	Corporal	I, 24th Iowa V. Inf.	7	New York	81	72 00	Age	Oct. 7, 1922
Constant, Christopher	Private	D, Fremont's Body Guard Cavalry	2½	Germany	79		Age	July 27, 1920
Conway, John	Musician	B, 3d U. S. Inf.	168	Texas	69	20 00	Age and deafness	Jan. 2, 1923
Cook, James	Landsman	U. S. Navy	25	New York	80	50 00	Age	Oct. 24, 1922
Cooley, Jonathan L.	Private	F, 6th Tenn. Cav.	14	Tennessee	49	50 00	G. S. W. right thigh	Dec. 5, 1894
Cooper, Jack H.	Corporal	K, 40th U. S. V. Inf.	21	California	43	30 00	Rheumatism	Jan. 8, 1919
Corbett, John	Private	U. S. Marine Corps	60	Ireland	47	8 00	Broken hip	Oct. 28, 1909
Corcoran, John	Sergeant	G, 20th U. S. Inf.	32	Canada	66	60 00	G. S. W. right hand	April 21, 1921
Corrigan, William	Private	G, 4th Cal. Inf.	36	Ireland	73	50 00	Stomach trouble	Aug. 9, 1913
Coulter, Otto R.	Private	F, 7th Cal. V. Inf.	6	Illinois	50	15 00	Sciatica	July 26, 1920
Court, Ernest	Corporal	B, 10th U. S. Inf.	36	Missouri	43	30 00	Ataxia, both legs	May 15, 1919
Courtright, John R.	Private	F, 13th Ohio Inf. etc.	37	Ohio	83	50 00	Age	April 12, 1920
Courtright, Willis T. D.	Private	H, 1st N. H. V. Inf.	5	Connecticut	48	30 00	Pulmonary suspect	Feb. 7, 1923
Cowen, John Q.	Private	E, 142d Ill. Inf. etc.	10	Illinois	66	50 00	Crippled hand	Oct. 3, 1910
Coyne, James A.	Private	I, 2d La. V. Inf.	4	Louisiana	68	30 00	Neurasthenia	Aug. 2, 1912
Crandall, Samuel B.	Private	A, 9th Ill. V. Inf. etc.	89	Ohio	50	12 00	Rheumatism	June 13, 1910
Crary, Archie W.	Private	I, 52d Iowa V. Inf.	5	Iowa	47		Result of influenza	June 1, 1923
Crossman, William H.	Private	H, 9th N. Y. V. Inf.	14	Pennsylvania	52	50 00	Age	Oct. 26, 1893
Cummings, Charles W.	Private	F, 1st Mass. Cav.	21	New Hampshire	75	50 00	Age	Aug. 22, 1917
Cummings, William	Private	12th Mass. Lt. Batty. Art.	31	Maine	60	50 00	Rupture	Dec. 17, 1904
Curry, James F.	Private	D, 3d Neb. V. Inf.	11	Massachusetts	55	15 00	Varicose veins	Feb. 20, 1922
Dace, John	Private	C, 151st Ill. Inf.	11	Missouri	66	50 00	Partial paralysis	Jan. 13, 1915

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA—Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Daley, Thomas J.	Private	F, 1st Cal. V. Inf.	15	California	44	$15 00	Dysentery	Jan. 24, 1913
Daniels, Charles	Private	M, 49th U. S. V. Inf.	20	North Carolina	45	30 00	Locomotor ataxia	Feb. 4, 1918
Daniels, Lewis	Private	B, 10th U. S. Cav.	14	Georgia	47	18 00	Loss finger, right hand	July 6, 1922
Daum, Henry	Private	B, 24th N. Y. Inf.	3	Germany	60	50 00	Age	Oct. 22, 1897
Davies, Henry A.	Private	L, 13th Minn. V. Inf.	17	Maryland	53	12 00	Cataract, left eye	Feb. 19, 1923
Davis, Calvin L.	Private	K, 16th U. S. Inf.	39	New York	36	18 00	Kidney trouble	Mar. 20, 1914
Davis, Homer S.	Private	I, 9th Minn. Inf.	27	Kentucky	89	72 00	Age	Mar. 24, 1920
Davis, Nathan	Sergeant	K, 118th Ind. Inf. etc.	12	Illinois	78	50 00	Stomach trouble	July 26, 1920
Dawson, Thomas	Private	E, 5th U. S. Cav.	32	England	73	20 00	Rheumatism	July 8, 1917
Dean, Thomas	Corporal	G, 1st Wis. Inf.	37	England	80	50 00	Age	April 23, 1921
de Jarnac, Edmund	Musician	Band, 8th U. S. Inf.	121	France	67	30 00	Varicose veins, blind	July 12, 1914
DeLaccy, Frederick A.	Private	M, 1st Wash. V. Inf.	14	England	67	12 00	Age	Feb. 4, 1922
Dennison, William H.	Artificer	A, 1st N. Y. V. Inf. etc.	23	Canada	59	24 00	Chronic gastritis	Jan. 17, 1922
Devlin, John J.	Private	Hosp. Corps, U. S. A.	14	California	49	6 00	Gastric operation	Dec. 18, 1922
Dewald, Charles P.	Private	E, 14th U. S. Inf.	36	Virginia	45		Throat trouble	Mar. 2, 1917
Dickerson, George M.	Private	D, 32d Ill. Lt. Art.	37	New York	73	50 00	Age	Dec. 21, 1916
Dickson, David	Private	F, 12th Mo. Cav.	18	Missouri	69	50 00	Heart trouble	June 18, 1915
Dickson, William	Private	D, 9th U. S. Vet. Vols.	49	Scotland	70	50 00	Rheumatism	Dec. 13, 1907
Dillane, James	Sergeant	I, 4th U. S. Inf.	36	Massachusetts	68	20 00	Age	Mar. 3, 1915
Di Pace, Antonio	Private	E, 8th U. S. Cav.	9	Italy	49	12 00	Diarrhoea, itch, rheumatism	June 7, 1923
Diven, Murray	Private	H, 19th U. S. Inf. etc.	108	Kentucky	47		Rheumatism	Jan. 25, 1923
Dixon, Frank	Private	C, 32d U. S. Inf.	37	England	63		Asthma	Mar. 2, 1905
Dixon, John (alias Geo. F. Steadman)	Private	F, 1st Mo. Cav.	19	Wisconsin	74		Age	Oct. 13, 1920
Doerr, Henry	Private	I, 11th N. Y. S. M. Inf. etc.	14	Germany	74	50 00	Rheumatism	Aug. 19, 1919
Donlan, Patrick	Private	A, 5th U. S. Cav.	36	Ireland	56	50 00	General debility	Nov. 19, 1894
Donahoo, William J.	Private	I, 14th Ill. Cav.	18	Ohio	66	50 00	Swelling in arm	Oct. 8, 1912
Donlon, Dennis G.	Ord. Seaman	U. S. Navy	10	Ireland	63	50 00	Lumbago	Dec. 13, 1910
Donovan, John E.	Private	F, 21st U. S. Inf. etc.	134	Massachusetts	46	30 00	Meningitis	Dec. 21, 1919
Dooley, Daniel C.	Sergeant	C, 11th U. S. Inf. etc.	82	Ireland	49	15 00	Blood poisoning	Sept. 2, 1911
Dority, Henry W.	Private	Unassigned, 19th Me. Inf.	2	Maine	19	72 00	Blind	Dec. 21, 1895
Downs, Michael	Private	U. S. Marine Corps	36	Ireland	52	17 00	Rheumatism	Oct. 9, 1922
Doyle James, M.	Private	A, 28th U. S. V. Inf.	21	Rhode Island	49	12 00	Bladder trouble	Sept. 12, 1915
Doyle, Keiran J. (alias Joseph Sullivan)	Sergeant	E, 8th U. S. Cav.	47	Ireland	67	20 00	General debility	April 17, 1923
Doyle, Michael	Private	G, 4th U. S. Cav.	14	Ireland	52		Rheumatism	Dec. 12, 1922

Doyle, Philip T.	Private	A, 23d U. S. Inf.	10	Pennsylvania	56	20 00	Broken left wrist	Dec. 22, 1914
Draper, Thomas D.	Private	H, 4th Cav. Inf.	37	New York	65	50 00	General debility	May 14, 1899
Driscoll, Jeremiah	Private	B, 61st Penn. Inf.	22	Ireland	52	50 00	Rheumatism	Jan. 18, 1896
Drummond, Benjamin	Private	D, 7th Cal. Inf.	19	Illinois	62	50 00	Rheumatism	Dec. 15, 1909
Dunbar, Joseph	Private	A, 58th Penn. Inf.	39	England	70	50 00	Age	July 5, 1912
Dunn, Michael C. (alias Joseph Smith)	Landsman	U. S. Navy	25	Louisiana	65	50 00	Broken ribs	Mar. 11, 1902
Dupont, John	Private	K, 8th Cal. Vol. Inf.	7	Holland	56		Kidney and bladder trouble	Nov. 24, 1920
Durney, James N.	Private	6th Batty., 1st Me. L. A.	31	Maine	72	72 00	Age	Jan. 21, 1916
Durst, Fred	Private	Hosp. Corps U. S. A. etc.	86	Wisconsin	54		Rheumatism, bronchitis	Mar. 1, 1921
Dushane, Jesse P.	Private	K, 100th Penn. Inf. etc.	32	Pennsylvania	74	50 00	Age	April 15, 1916
Duval, Roger	2d Lieut.	H, 35th U. S. V. Inf.	19	Maryland	56	30 00	Double hernia	April 24, 1922
Dwyer, Patrick	Private	F, 1st U. S. Inf.	59	Ireland	54	12 00	Crippled right leg	April 6, 1914
Dye, Peter H.	1st Lieut.	G, 7th N. J. Inf.	12	New Jersey	82	50 00	Age	Jan. 10, 1923
Earnest, Melville C.	Private	A, 7th U. S. Inf. etc.	45	Tennessee	51		Diarrhoea	Feb. 7, 1923
Earp, Newton J.	Sergeant	F, 4th Iowa Cav.	43	Kentucky	73	50 00	Gunshot wound	Aug. 15, 1910
Edwards, Edwin	Corporal	K, 5th Minn. Inf.	12	Norway	77	72 00	Total blindness	Feb. 1, 1919
Elliott, Henry	Private	M, 11th U. S. V. Cav.	18	Maryland	57		Asthma, etc.	Jan. 5, 1916
Ennis, Ira V.	Private	B, 1st Cal. H. A.	9	New Jersey	42	15 00	Bronchitis	May 16, 1903
Erickson, Andrew	Machinist	U. S. Navy	34	Sweden	72	10 00	Age	June 28, 1923
Estey, Grant S.	Private	H, 6th Cal. V. Inf.	7	California	59		Rheumatism	Feb. 10, 1923
Evans, James E.	Private	H, 12th Ind. Inf.	48	Ohio	76	72 00	Age	April 11, 1921
Evans, John W.	Carpenter's Mate	U. S. Navy	32	New York	58	30 00	Deafness	July 18, 1911
Everts, Aranthus	Private	B, 8th Ill. Cav.	7	Iowa	60	50 00	Rheumatism	Dec. 23, 1904
Fairbanks, Albert F.	Private	D, 43d Mass. Inf.	11	Massachusetts	73	50 00	Rheumatism	Mar. 27, 1918
Fales, Charles E.	Private	K, 9th N. Y. Inf. etc.	71	Maryland	51		Deafness	July 8, 1915
Feeney, John	Private	I, 1st U. S. Art. etc.	276	Connecticut	51		Varicose veins	Feb. 14, 1922
Felty, Thomas L.	Private	C, 9th Ill. V. Inf.	11	Illinois	71	18 00	Age	Mar. 15, 1923
Fender, George A.	Private	C, 145th Ind. Inf.	12	Indiana	76	50 00	Age	Feb. 3, 1923
Ferera, Eugene	Private	Casual, C. A. C. U. S. A.	36	Italy	43	18 00	Tuberculosis	Oct. 9, 1912
Fernald, Thomas C.	Musician	E, 9th Minn. Inf.	3	Massachusetts	65	50 00	Age	Sept. 16, 1914
Ferree, Samuel	Private	G, 31st U. S. V. Inf. etc.	32	Kentucky	53		Rheumatism	Feb. 5, 1919
Fitzpatrick, Thomas J.	Sergeant	A, 1st Cal. H. A.	16	California	48		Fracture, collar bone	Jan. 8, 1923
Flanagan, John J.	Private	K, 17th U. S. Inf.	72	Pennsylvania	40	60 00	Loss of fingers, right hand	Feb. 17, 1921
Flood, James	Private	B, 8th Mass. Vol. Mil.	4	New York	71	72 00	Age	Sept. 13, 1916
Flynn, Edmund W.	Private	I, 5th Wis. Inf.	39	New York	55	72 00	G. S. W., right arm	July 6, 1894
Flynn, Martin	Fireman	U. S. Navy	36	Ireland	39		Chronic gastritis	Aug. 7, 1908
Foley, John	Private	A, 23d Ill. Inf.	6	Ireland	82	50 00	Age	April 19, 1922
Foord, John G.	Private	A, 1st N. Y. V. Inf. etc.	77	Scotland	52	15 00	Pulmonary disease	Jan. 11, 1922
Ford, Frank E.	Private	F, 8th N. Y. V. Inf. etc.	41	New York	42		Chronic gastritis	June 12, 1922
Foster, Andrew H.	Private	F, 1st Mich. L. A.	19	New York	69	50 00	Cough	Sept. 9, 1912
Foster, Charles E.	Private	M, 14th U. S. Inf.	36	Kansas	50	12 00	Sore feet	July 7, 1916
Fouke, Frank J.	Corporal	K, 1st Neb. V. Inf.	16	Illinois	54	12 00	G. S. W. in leg	Oct. 1, 1921

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA—Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Fox, Alexander	Private	C, 177th N. Y. Inf.	11	New York	54	$72 00	Age	Nov. 28, 1898
Fox, Fred E.	Corporal	H, 20th Kans. V. Inf.	18	Kansas	59		Tuberculosis	Dec. 12, 1922
Frazer, Thomas J.	Private	K, 150th Ohio Inf.	3	Ohio	74	72 00	General debility	Jan. 11, 1916
Frear, Chauncey E.	Private	L, 6th N. Y. Hy. Art.	24	New York	54	72 00	Rheumatism	April 22, 1893
Frederick, Jacob	Private	C, 1st Cal. Hy. Art.	9	Louisiana	65	24 00	Rheumatism	Sept. 23, 1920
Friel, John J.	Private	B, 1st U. S. Inf.	62	Ireland	40	24 00	Rheumatism	Nov. 12, 1902
Frost, Samuel	Private	E, 14th Iowa Inf.	37	Iowa	77	50 00	Age	Feb. 17, 1920
Fry, Isaac L.	Private	B, 55th Penn. Inf.	16	Pennsylvania	75	50 00	Asthma	Mar. 20, 1922
Fuessel, George A.	Corporal	Band, 4th U. S. Cav. etc.	140	Texas	35	12 00	Bronchial asthma	Jan. 17, 1922
Gallagher, John	Private	G, 14th U. S. Inf. etc.	25	Massachusetts	43		Neuralgia	Sept. 29, 1910
Gallagher, John F.	Private	F, 35th U. S. V. Inf.	21	Massachusetts	47		Tuberculosis	Dec. 16, 1910
Gallagher, Thomas	Private	K, 15th N. Y. Cav.	18	Ireland	52	50 00	Deafness	Oct. 6, 1897
Gallow, Joseph McC.	Private	E, 8th Minn. Inf.	15	New York	64	50 00	Rheumatism	Mar. 24, 1904
Galvin, Timothy T.	Private	A, 7th Ill. V. Inf. etc.	60	Ireland	50		Rheumatism	Dec. 17, 1918
Garrett, Henry M.	Private	G, 24th U. S. Inf. etc.	89	S. Carolina	47	30 00	Loss of left leg	Mar. 23, 1923
Garrity, Joseph T.	Private	E, 3d U. S. Art.	36	Massachusetts	50		Rheumatism	Aug. 9, 1921
Geerlink, Simon C.	Private	B, 6th Cal. V. Inf.	5	Holland	69	12 00	Rheumatism	June 27, 1922
George, William H.	Q. M. Sergeant	24th Ky. Inf.	40	Kentucky	78	50 00	Age	Jan. 9, 1918
Geran, Anthony	Private	E, 4th Cal. Inf.	41	California	45	50 00	Rheumatism	Dec. 18, 1893
Gibbs, William	Private	K, 7th U. S. Cav.	40	England	62	20 00	Nephritis	Jan. 11, 1910
Gibson, John E.	Private	G, 8th Mich. Inf. etc.	37	Michigan	76	50 00	Rheumatism	June 25, 1919
Gilbert, Horace B.	Sergeant	F, 30th N. Y. Inf.	54	New York	66	72 00	Blindness	June 13, 1907
Gill, Marvin	Private	F, 2d Neb. Cav.	8	Pennsylvania	83	50 00	Age	April 3, 1920
Gillis, Harry J.	Private	L, 1st Lu. V. Inf.	3	Minnesota	59	15 00	Chronic myocarditis	April 21, 1923
Gingher, John T.	Private	I, 9th Penn. Cav.	14	Pennsylvania	71	50 00	Rheumatism	Sept. 28, 1911
Ginnety, James	Private	D, 17th Wis. Inf.	14	Ireland	50	72 00	Age	Dec. 8, 1892
Gleason, James	Landsman	U. S. Navy	9	Massachusetts	18	18 00	La grippe	Dec. 12, 1918
Gowan, Frank V.	Private	G, 11th U. S. Inf.	15	California	39		Result of pneumonia	July 11, 1921
Graham, George W.	Private	Hosp. Corps, U. S. A.	13	Michigan	53	18 00	Hernia	Aug. 25, 1922
Graham, Robert R.	Private	A, 1st Wyo. Lt. Art.	11	Scotland	18	12 00	Hernia	Dec. 2, 1904
Grammont, John E.	Private	A, 3d U. S. Inf.	36	Wisconsin	13		Incontinence urine	Feb. 5, 1918
Green, George	Private	D, 1st Cal. V. Inf.	16	New York	12	12 00	Chronic gastritis	April 21, 1921
Green, John	Private	C, 28th U. S. V. Inf.	22	Ireland	18	15 00	Spinal trouble	July 29, 1919
Greenwald, Samuel	2d Lieut.	I, 1st U. S. V. Cav.	5	California	60	18 00	Rheumatism	May 9, 1920

Grey, John	Private	U. S. Marine Corps etc.	216	Massachusetts	63	12 00	Disabled right hand	Mar. 1, 1921
Griffeth, Edward B.	Sergeant	M, 4th Mich. Cav.	35	New York	77	50 00	Age	Sept. 13, 1922
Griffin, Michael F.	Private	H, 46th U. S. V. Inf. etc.	92	Rhode Island	32	8 00	Lumbago	Dec. 16, 1908
Grimes, John L.	Blacksmith	U. S. Navy	70	California	43	24 00	Hernia	Jan. 3, 1912
Griswold, Gaylord	Private	B, 38th Wis. Inf.	16	Wisconsin	71	50 00	Age	Jan. 16, 1917
Guinan, Edward	Sergeant	C, 8th U. S. Inf. etc.	62	Ireland	53	20 00	Varicose veins	Aug. 23, 1913
Gutzman, Julius C.	Private	B, 91st N. Y. Inf.	9	Prussia	65	50 00	Age	June 25, 1907
Haeckl, John J.	Private	A, Battn. U. S. Engrs.	12	Australia	48	12 00	Skin trouble	Dec. 11, 1913
Hafner, Andrew	Landsman	U. S. Navy	11	Germany	73	72 00	Paralysis	May 23, 1918
Hagaman, Abraham J. (alias Abram Hagerman)	Private	I, 2d Vet. N. Y. Cav.	25	New York	58	50 00	Rheumatism	April 27, 1903
Hagan, William	Private	M, 9th U. S. Cav.	36	Georgia	40		Chronic dysentery	Sept. 18, 1918
Haggerty, Michael	Private	G, 9th Kans. Inf.	36	Ireland	72	50 00	Age	May 12, 1914
Hall, Charles	Sergeant	H, 40th N. Y. Inf.	24	New York	66	50 00	Paralysis	Nov. 24, 1909
Hall, George I.	Private	H, 1st Cal. V. Inf.	15	California	57	18 00	Kerato iritis	Aug. 10, 1922
Hall, Henry	Private	E, 8th Penn. Inf.	18	Vermont	71	50 00	General debility	Aug. 15, 1898
Halsey, James F.	Private	I, 1st Cal. V. Inf.	17	California	47		Acute gastritis	Nov. 19, 1920
Hamilton, Frank G.	Sergeant	D, 6th U. S. Inf. etc.	156	New York	69	20 00	Rheumatism	April 1, 1920
Hamilton, Thomas F.	1st Lieut.	I, 73d Ohio Inf.	46	Ohio	67	50 00	General debility	Nov. 9, 1905
Hanes, Frank E.	Private	A, 4th U. S. Inf. etc.	106	Michigan	41		Sciatica	Oct. 28, 1921
Haney, Patrick, Jr.	Private	D, 125th Penn. Inf.	9	Pennsylvania	79	50 00	Age	Dec. 13, 1921
Hankins, Winfield S.	Private	Casual, 11th U. S. Inf.	21	New Jersey	34		Rheumatism	Oct. 28, 1913
Hanley, Michael	Private	A, 6th U. S. Inf.	36	Ireland	43	30 00	Piles	Jan. 3, 1913
Hannan, James R.	Private	D, 16th N. Y. Hy. Art.	21	New York	69	50 00	Age	Sept. 24, 1910
Hansen, Simon	Private	Madsen's Utah Mil. Cav.	6	Denmark	77	20 00	Age	July 29, 1920
Hanson, Nels	Private	H, 1st Mont. V. Inf.	15	Sweden	52	8 00	Varicose veins	May 21, 1921
Hansson, Martin	Ord. Seaman	U. S. Navy	105	Sweden	42	15 00	Rheumatism	Feb. 26, 1911
Hardie, Robert F.	Private	F, 22d U. S. Inf.	36	New York	45		Chronic nasal catarrh	April 17, 1914
Harkness, Oscar L.	Private	K, 78th Ill. Inf.	33	Illinois	65	50 00	Age	Dec. 17, 1909
Harney, Robert	Private	A, 62d Mass. Inf.	1	Massachusetts	62		Sore leg	July 4, 1913
Harper, Alexander	Corporal	D, 113th Ill. Inf.	30	Illinois	73	50 00	General debility	Oct. 2, 1916
Harrington, Frank	Private	B, 1st Conn. Hv. Art. etc.	43	Connecticut	49	30 00	Tuberculosis	Nov. 16, 1920
Harrington, Patrick F.	Corporal	E, 1st Mont. V. Inf.	17	D. C.	55	15 00	Rheumatism	Sept. 18, 1913
Harris, Robert J.	Private	K, 1st Wash. V. Inf.	16	Maine	48	18 00	Chronic asthma	Sept. 17, 1921
Harris, Samuel A.	1st Lieut.	G, 3d N. C. V. Inf. etc.	44	North Carolina	52	15 00	Gastralgia	Mar. 21, 1923
Haskins, Charles	Private	D, 8th N. Y. Cav.	38	New York	69	50 00	Rheumatism	May 1, 1913
Hathaway, William H.	Private	H, 1st Vt. V. Inf. etc.	32	Canada	63		Nervous trouble	June 12, 1923
Hatherly, William	Private	H, 1st U. S. V. Engrs.	11	England	68	50 00	Rheumatism	Oct. 13, 1915
Haubil, George J.	Oiler	U. S. Navy	35	New York	65	12 00	Age	Nov. 7, 1921
Hawkins, William J.	Private	E, 2d Ill. Cav.	10	Illinois	73	50 00	Lame back	Mar. 23, 1916
Hayes, Hugh	Private	I, 7th Vermont Inf.	4	Ireland	55	50 00	Asthma	Nov. 25, 1897
Hayes, James	Private	E, 1st Maine Cav.	37	New Brunswick	62	50 00	Dyspepsia	Nov. 10, 1901
Hayes, Johnie E.	Private	A, 365th U. S. Inf.	10	Louisiana	26		Arrested tuberculosis	July 13, 1922

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA—Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Haynes, Wilburn	Private	H, 20th Kans. Vol. Inf.	4	Kansas	49	$12 00	Heart trouble	Nov. 11, 1920
Heales, John	Private	B, 6th Wis. Inf.	43	England	79	50 00	Age	June 10, 1915
Hearn, Charles W.	Private	D, 47th N. Y. V. Inf.	11	New York	49	.....	Fracture of rib	Sept. 4, 1922
Heath, Leon D.	Private	A, 7th Cal. Inf.	18	Illinois	68	50 00	Rheumatism	Nov. 18, 1905
Helstein, Charles	Seaman	U. S. Navy	24	Sweden	67	50 00	Rheumatism	Mar. 7, 1909
Hengl, Joseph L.	Private	G, 1st Ala. V. Inf.	6	Alabama	50	18 00	Deafness	June 29, 1923
Hennessey, James B.	Private	I, 9th U. S. Inf.	26	Illinois	55	.....	Injured left leg	Dec. 12, 1921
Henry, Allen	Private	E, 3d Colo. Cav.	4	Ohio	70	50 00	Age	Sept. 24, 1915
Herr, George W.	Corporal	C, 59th Ill. Inf.	63	Pennsylvania	77	50 00	Age	April 23, 1921
Herrier, Philip	Private	K, 13th Ohio Cav. etc.	66	France	67	50 00	Deafness	Nov. 3, 1911
Higgins, John W.	Private	K, 175th Ohio Inf. etc.	11	Ohio	64	50 00	Dropsy	Mar. 26, 1911
Hildebrandt, Martin	Private	E, 2d Ore. V. Inf.	15	Germany	44	24 00	Bronchitis	June 21, 1909
Hill, Aleck	Private	M, 45th U. S. V. Inf.	23	Finland	48	12 00	Rheumatism	Dec. 9, 1914
Hill, Erwin D.	Trumpeter	C, 4th Ohio Cav.	7	Ohio	59	50 00	Rheumatism	April 7, 1902
Hill, George	Private	M, 6th N. Y. Cav.	18	Germany	69	50 00	G. S. W., left breast	Nov. 4, 1914
Hinden, Valentine	Private	K, 14th U. S. Inf. etc.	36	France	66	.....	Rheumatism	Oct. 1, 1909
Hoesman, Herman F.	Captain	G, 40th U. S. C. Inf. etc.	57	Ohio	79	50 00	Paralysis	July 12, 1920
Hogan, Charles J.	Captain	M, 1st Cal. V. Inf.	16	California	51	17 00	G. S. W., right chest	Jan. 11, 1923
Holmberg, August R. L.	Seaman	U. S. Navy	108	Sweden	57	.....	Amoebic dysentery	Feb. 16, 1922
Holmes, Charles A.	Private	H, 9th U. S. Inf.	41	New Brunswick	47	12 00	Sclerosis	Dec. 12, 1908
Holt, David H.	2d Lieut.	F, 8th Cal. Inf.	31	Maine	64	50 00	Chronic diarrhoea	Oct. 21, 1904
Honan, James	Private	G, 1st U. S. Cav.	31	Ireland	76	20 00	Age	Jan. 26, 1923
Hood, Edward P.	Private	F, 2d Cal. Inf.	33	New Hampshire	56	50 00	Rupture	Sept. 19, 1896
Hoover, Reuben	Private	B, 152d Ind. Inf.	6	Ohio	77	50 00	Age	Mar. 21, 1921
Hornaday, William H.	Sergeant	F, 63d Ind. Inf.	34	Indiana	78	50 00	Age	May 21, 1923
Horton, Charles N.	1st Cl. Boy	U. S. Navy	25	California	64	50 00	Rheumatism	June 29, 1915
Hosford, Henry H.	1st Cl. Pvt.	L, 2d U. S. V. Engrs.	11	Indiana	63	30 00	Physical weakness	Nov. 21, 1917
Hough, George H.	Private	H, 35th U. S. V. Inf.	2	California	52	.....	General debility	Mar. 15, 1916
House, Little B.	Private	H, 1st Tex. V. Inf. etc.	26	Alabama	44	6 00	Injury to arm	Nov. 8, 1911
Hovey, Charles	Musician	C, 21st U. S. Inf.	60	New York	62	20 00	Wound in leg	Dec. 23, 1915
Hovey, Theodore	Private	D, 96th N. Y. Inf.	16	New York	74	50 00	Age	Jan. 21, 1921
Howard, John W.	Private	H, 14th N. Y. Hy. Art.	19	New York	76	72 00	Loss of left arm	Dec. 30, 1919
Howard, Thomas M.	1st Cl. Fireman	U. S. Navy	36	Kentucky	44	12 00	Rheumatism	Jan. 19, 1908
Hoyt, James M.	Private	E, 27th Ill. Inf.	37	Ohio	68	50 00	Age, hernia	Oct. 21, 1909
Hubbard, James L.	Private	D, 6th Mo. V. Inf. etc.	46	Indiana	45	15 00	Gastritis	Sept. 11, 1917

Hubbard, John N.	Prin. Musician	19th Ind. Inf.	36	Indiana	71	50 00	Rheumatism	July 15, 1911
Hubbard, Joseph B.	Sergeant	K, 1st Fla. V. Inf. etc.	102	Virginia	50		Rheumatism	June 28, 1923
Hudson, Thomas M.	Private	H. C. U. S. A.	103	South Carolina	43	18 00	Drop wrist	Sept. 21, 1914
Hughes, Charles	Machinist	2d Cl. U. S. Navy	22	England	48		Asthma	Aug. 10, 1914
Hughes, John B.	Private	A, 15th Minn. V. Inf.	8	Ireland	46		Pleurisy	May 27, 1922
Hughes, John W.	Private	H, 1st S. D. V. Inf.	15	California	53		Rheumatism	Nov. 14, 1917
Hughey, George W.	Private	B, 4th Ohio Cav.	33	Ohio	67	50 00	Rheumatism	Oct. 8, 1912
Hugoboom, Fred	Private	A, 5th U. S. Cav.	9	New York	60		Lame back	Oct. 27, 1916
Humphreys, John	Sergeant	D, 1st U. S. Cav.	60	Pennsylvania	73	20 00	Age	Oct. 20, 1921
Hunt, George	Private	I, 2d Mo. V. Inf.	10	Oregon	46	12 00	Chronic appendicitis	July 29, 1922
Hunter, George E.	Sergeant	A, 4th U. S. Cav.	60	Nova Scotia	73	20 00	Rheumatism	Oct. 6, 1919
Hunton, George B.	Private	H, 33d U. S. V. Inf.	20	Virginia	51		General debility	April 11, 1917
Hurd, Alfred D.	Private	C, 111th N. Y. Inf.	34	New York	68	50 00	Rheumatism	Feb. 8, 1912
Huston, Frank H.	Corporal	C, 23d U. S. Inf. etc.	22	Massachusetts	43	18 00	Gastralgia, poor vision	Nov. 15, 1907
Hutchison, Hugh	Private	F, 1st Idaho V. Inf.	16	Ireland	68		Age	Mar. 1, 1923
Hynes, John A.	1st Lieut. Adjt.	I, 17th Ill. Cav.	18	Wisconsin	50	50 00	Loss 3 fingers	Oct. 19, 1893
Ittner, George E.	Fireman	U. S. Navy	5	Maryland	53		Acute cold	April 21, 1921
James, William J.	Private	4th Independ't Horse Batty. Wis. Vols.	19	Pennsylvania	83	50 00	Cataract on eye	April 7, 1922
Jenkins, Robert	Private	4th 2d Bat. V. R. C. U. S. A.	28	New York	75	50 00	Age	May 5, 1921
Jennings, Thomas F.	Private	B, 1st Cal. Hy. Art.	8	Virginia	44	12 00	Heart trouble	Mar. 4, 1912
Johnson, Charles H.	Private	I, 4th U. S. Inf.	12	New York	57	12 00	Blood disease	Feb. 4, 1915
Johnson, David M.	Private	G, 24th U. S. Inf.	25	Tennessee	40	10 00	Pneumonia	June 3, 1921
Johnson, Howard W.	Private	Hosp. Corps, U. S. A.	25	Illinois	42	24 00	Heart disease	Mar. 3, 1921
Johnson, John T.	Private	E, 1st Cal. V. Inf.	15	California	48	30 00	Eye disease	July 3, 1922
Johnston, Charles E.	Private	K, 9th U. S. Cav.	36	Kentucky	48	65 00	Loss of right leg	Mar. 9, 1913
Johnstone, William	Artificer	L, 30th U. S. V. Inf.	19	Michigan	38	30 00	Recent pneumonia	Aug. 7, 1918
Jones, Hampton H.	Private	I, 14th Iowa Inf.	16	Pennsylvania	83	50 00	Age	July 13, 1918
Jones, James T.	Private	G, 41st Ill. Inf.	35	Illinois	70	50 00	Chills and fever	July 6, 1916
Jones, Mark S.	Private	A, 6th Bat. U. S. Guards	23	Illinois	53		Chronic gastritis	May 11, 1921
Jordan, John F.	Private	E, 19th Mass. Inf.	19	Massachusetts	78	50 00	Age	Dec. 7, 1920
Jordan, Samuel P.	Private	C, 2d La. V. Inf. etc.	66	Alabama	51		Result of influenza	Jan. 11, 1923
Josselyn, Joseph H., Jr.	Corporal	C, 2d Cal. Inf.	17	Massachusetts	63	50 00	Rheumatism	Sept. 27, 1909
Kane, Hugh	Private	A, 5th Penn. Cav.	15	Ireland	65	72 00	Lumbago	Feb. 14, 1904
Kaneen, Shelton C.	Private	D, 8th Cal. V. Inf.	12	California	51		Kidney trouble	Nov. 25, 1909
Karr, William	Private	B, 9th Mich. Cav.	21	Pennsylvania	73	50 00	Age	May 8, 1911
Kaufman, Charles (alias Charles Merchant)	Private	M, 10th N. Y. Cav.	7	Germany	72	50 00	Nervous prostration	Feb. 8, 1913
Kaufman, Charles F.	Sergeant	G, 2d Ore. V. Inf.	15	Illinois	42	12 00	Gastric ptosis	Oct. 1, 1915
Kavanaugh, Robert P.	Corporal	L, 7th Ill. V. Inf.	5	Ireland	53		Malaria	Jan. 5, 1922
Keefe, Charles I.	Private	O, 6th U. S. Art.	17	California	54	12 00	Rheumatism	Feb. 1, 1918
Keeland, Edward	Private	B, 3d U. S. Cav.	60	Michigan	65		Rheumatism	Dec. 29, 1916
Kelley, Edgar	Private	A, 45th U. S. V. Inf.	21	New York	52		Operation on nose	April 13, 1917

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA - Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Kelley, Thomas J.	Private	I, 5th Ill. Cav.	20	Illinois	65	$50 00	Rheumatism	Feb. 9, 1912
Kemp, Walter E.	Corporal	K, 1st Cal. V. Inf.	18	California	45	18 00	Rheumatism	June 17, 1921
Kenoyer, Lemuel	Private	I, 51st Mo. Inf.	4	Missouri	76	50 00	Age	June 28, 1923
Kidder, John W.	Private	D, 3d Wis. Inf.	54	Wisconsin	72	50 00	Age	Dec. 18, 1915
Kiernan, John	Private	E, 2d U. S. Cav.	60	Connecticut	65	20 00	Hernia	Nov. 19, 1919
King, William	Private	F, 2d Cal. Inf.	36	England	58	72 00	Deaf and blind	June 22, 1903
Kinsley, Richard	Private	H, 4th U. S. Inf.	60	Massachusetts	61	20 00	Rheumatism	Dec. 9, 1918
Knapp, Orris	Sergeant	A, 3d Colo. Cav.	4	Massachusetts	84	50 00	Age	Nov. 15, 1916
Knickmeyer, William	Private	I, 1st Mo. Art.	36	Germany	64	50 00	Heart disease	May 26, 1904
Knott, Thomas	Private	K, 2d Mo. Cav.	36	Ohio	62	50 00	Rheumatism	Sept. 25, 1904
Knowles, Augustus	Private	B, 35th Iowa Inf.	36	Connecticut	73	50 00	Kidney and bladder trouble	June 16, 1917
Koopman, Frederick	Private	E, 5th U. S. Cav. etc.	36	Germany	46		Nervousness	Mar. 13, 1916
Kosky, John F.	Private	G, 67th U. S. Inf.	20	Russia	30		Neuritis	Feb. 15, 1923
Kraemer, William	Private	C, 61st N. Y. Inf.	16	Germany	67	50 00	Age	Jan. 7, 1914
Kroning, Ernest	Seaman	U. S. Navy	6	Germany	49		Stomach trouble	Nov. 3, 1910
Kuhsel, Gustave	Private	M, 3d N. J. Cav. etc.	56	Germany	75	50 00	Loss of leg, asthma	April 16, 1919
Lamb, Henry S.	Corporal	C, 42d Wis. Inf.	10	Ohio	71	50 00	Senility, bronchitis	June 19, 1914
Lambrecht, Jacob	Private	E, 144th N. Y. Inf.	34	Germany	85	50 00	Age	Dec. 18, 1920
Lamon, Leander E.	Private	C, 1st Idaho V. Inf.	14	Indiana	57	12 00	Stomach trouble	Oct. 26, 1915
Lavoy, Frank A.	Sergeant	E, 1st U. S. Art. etc.	218	New Hampshire	68	20 00	Age	May 27, 1917
Lawrence, Demarquis L.	Private	K, 22d Maine Inf.	11	Maine	82	50 00	Age	July 19, 1918
Leary, James J.	Sergeant	M, 38th U. S. V. Inf. etc.	53	Ireland	49	15 00	Malaria	Mar. 28, 1922
Lee, William	Corporal	M, 25th U. S. Inf. etc.	36	Kentucky	48		Aphasia, hemiplegia	Sept. 27, 1914
Leeds, Harry	Corporal	H, 8th U. S. Cav. etc.	72	Ohio	49	18 00	Injury to hip	Feb. 2, 1922
Lennon, Charles	Private	B, 2d U. S. Art.	8	Ireland	47		Sciatica	Feb. 10, 1922
Leonard, Enoch	Private	M, 6th Ill. V. Inf.	5	Illinois	34	18 00	Rheumatism, malaria	Sept. 11, 1912
Leonard, Terence P.	Private	A, 1st S. D. V. Inf.	15	California	60	10 00	Age	Feb. 1, 1916
Lillivig, Andrew	Corporal	K, 14th Minn. V. Inf.	66	Norway	44	24 00	Heart disease	Dec. 31, 1910
Lockwood, James B.	Sergeant	K, 6th U. S. Cav.	35	New York	64		Age	Mar. 10, 1923
Londerman, John	1st Class Boatswain's Mate	U. S. Navy	251	Maine	67	58 18	Partial blindness	June 21, 1920
Long, James	Fireman	U. S. Navy	36	Ireland	49	12 00	Heart trouble	Oct. 16, 1922
Long, John	Private	F, 24th N. Y. Cav.	19	New York	60	50 00	Defective sight	July 21, 1904
Loos, Thomas F.	Private	K, 61st Ill. Inf.	20	Ohio	79	72 00	Lung trouble	Sept. 24, 1916
Lord, Jacob S.	Musician	Band, 2d Mass. Inf.	24	Massachusetts	55	50 00	Rheumatism	May 17, 1894

Lord, Jasper	Private	G, 4th Mass. Hy. Art.	10	Massachusetts	74	50 00	Age	June 30, 1921
Loveridge, Eugene L.	Private	F, 65th N. Y. V. Inf.	4	New York	59	30 00	Left hemiplegia	May 12, 1922
Lung, Warren S.	Private	Signal Corps, U. S. A.	23	Pennsylvania	54	50 00	Rheumatism	June 27, 1901
Lusch, William H.	Cook	D, 32d U. S. V. Inf.	20	Germany	47		Rheumatism	Jan. 21, 1921
Lynch, Hugh F.	Private	K, 39th Mass. Inf.	15	Ireland	71	50 00	Rheumatism	Sept. 28, 1907
Lynch, John	Private	A, 1st Cal. Hy. Art. etc.	31	New York	56	15 00	Bronchitis	Sept. 27, 1910
Lyons, Franklin	Fireman	U. S. Navy	36	Rhode Island	46	15 00	Heart trouble	Mar. 20, 1909
Lyons, John M. J.	Yeoman	U. S. Navy	36	New York	54		Partial paralysis	Jan. 8, 1914
McCafferty, Francis	Private	U. S. Marine Corps	144	Ireland	58	30 00	Asthma	Mar. 6, 1918
McCann, John	Seaman	U. S. Navy	36	Ireland	54	50 00	Hernia	July 26, 1899
McCarron, James H.	2d Lieut.	A, 1st Bat. U. S. Gds.	54	Massachusetts	56		Rheumatism	Feb. 11, 1921
McCarthy, James J.	Private	A, 3d U. S. Art.	10	California	52	12 00	Lumbago	Sept. 8, 1922
McCarty, Thomas	Private	I, 30th U. S. Inf.	52	New York	48	17 00	Tuberculosis	Aug. 17, 1920
McClintie, Michael S.	Private	C, 3d Colo. Cav.	4	Iowa	76	50 00	Age	Sept. 14, 1912
McClish, Stewart	Private	G, 99th Ohio Inf.	34	Ohio	69	50 00	Rupture	April 7, 1912
McConnell, Rudolph C.	Private	B, 13th Penn. Cav.	23	Pennsylvania	69	50 00	Stomach trouble	Oct. 25, 1917
McCown, John W.	Private	K, 5th Mo. V. Inf.	4	Missouri	59	30 00	Bronchial asthma	Feb. 27, 1914
McCoy, William	Corporal	D, 2d Cal. Cav.	43	Ohio	74	72 00	Age	Jan. 17, 1910
McCune, Robert E.	Private	I, 39th U. S. V. Inf.	20	Missouri	44	12 00	Rheumatism	Sept. 19, 1922
McDonald, Frank	Private	B, 2d N. Y. Inf.	13	New York	54	50 00	Chronic diarrhoea	Feb. 7, 1896
McFadden, Thomas A.	Private	A, 7th U. S. Inf.	145	Pennsylvania	41		General debility	July 5, 1921
McGilloway, James	Corporal	E, 1st Cal. V. Inf.	15	Ireland	63	18 00	Paralysis left arm	July 24, 1922
McGuire, John	Private	B, 1st U. S. Cav.	36	Ireland	67	50 00	Deafness	Mar. 10, 1905
McIntyre, Charles S.	Private	C, 7th Ill. Inf.	5	Illinois	54		Neuralgia	July 20, 1909
McNames, Calvin	Private	M, 17th Ill. Cav.	23	Canada	64	50 00	Nervous debility	April 24, 1909
McNeil, Charles S.	1st Cl. Boy	U. S. Navy	12	New York	75	50 00	Age	Feb. 20, 1923
McNeirney, John J.	Fireman 1st Cl.	U. S. Navy	256	Ireland	50	37 38	Dislocation right shoulder	Jan. 26, 1910
McPherson, August W.	Private	F, 21st N. Y. Inf.	24	Indiana	70	50 00	General debility	Oct. 5, 1909
MacPherson, John H.	Private	Band, 1st Mont. Inf.	17	Maryland	45	15 00	Rheumatism	Nov. 19, 1914
McWilliams, John C.	Private	A, 13th Iowa Inf.	4	Ohio	73	50 00	Age	Jan. 8, 1914
Madero, Antonio A.	Landsman	U. S. Navy	93	California	52	30 00	Tuberculosis	April 19, 1916
Maguire, James	Musician	I, 5th U. S. Inf.	99	New York	61		Bruised leg	Sept. 21, 1921
Mahan, Joseph	Private	K, 9th R. I. Inf. etc.	31	Ohio	50	50 00	Lumbago	Dec. 5, 1896
Mahon, Patrick J.	Private	D, 4th Penn. V. Inf.	6	Ireland	68	18 00	Malaria poisoning	Nov. 8, 1920
Mahoney, Daniel	Landsman	U. S. Navy	35	Ireland	55	50 00	Age	April 29, 1903
Mahoney, James	Private	A, 2d Maine Cav.	9	Canada	68	50 00	Effects of pneumonia	Oct. 7, 1911
Malley, William	Private	G, 8th Cal. Inf.	11	Ireland	68	50 00	Deafness	Mar. 17, 1907
Maloney, Michael	Private	K, 193d N. Y. Inf.	9	Canada	68	50 00	Rheumatism	Feb. 1, 1916
Marlette, Edward Z.	Private	D, 11th U. S. Inf.	11	New York	50	6 00	Rheumatism	April 24, 1923
Marple, Charles	Private	C, 6th U. S. Art. etc.	39	California	55	24 00	Rheumatism	Sept. 24, 1918
Marquis, Ellison	Private	F, 143d Ind. Inf.	10	Indiana	61	50 00	Rheumatism	June 6, 1909
Marshall, Jared B.	Private	B, 3d Mo. V. Inf.	5	Pennsylvania	51		Indigestion, hemorrhoids	July 18, 1921
Martin, Henry	Landsman	U. S. Navy	9	England	64	50 00	Heart disease	Feb. 15, 1906

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA—Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Martin, John H.	Private	B, 2d Penn. Inf.	3	Pennsylvania	70	$50 00	Rheumatism	May 1, 1912
Mason, Charles M.	Private	H, 30th Me. Inf. etc.	20	Maine	59	50 00	Rheumatism	Oct. 10, 1903
Massey, John H.	Chief Machinist	U. S. Navy	24	California	61		Hernia	Dec. 13, 1922
Matthews, Bud P.	Artificer	A, 10th U. S. Inf.	32	North Carolina	62		Rheumatism	July 4, 1917
Mathews, Orin O.	Private	A, 1st Ter. V. Inf. etc.	23	Nebraska	50		Rheumatism	Nov. 17, 1921
Mathews, Robert F.	Landsman	U. S. Navy	139	Maryland	51		Rheumatism	Feb. 11, 1919
Mathiesen, Hans C.	Private	K, 4th U. S. Cav.	15	California	31	18 00	G. S. W., leg; rheumatism	April 5, 1911
Mayhugh, Charles R.	Private	G, 39th Ohio V. V. Inf.	48	Ohio	51	72 00	Age	Mar. 9, 1897
Mealy, Joseph J.	Private	A, 1st Ter. V. Inf. etc.	25	California	39	6 00	Auto-intoxication	Dec. 13, 1914
Means, Walter E.	Prin. Musician	Band, 2d Ga. Inf.	62	Missouri	57		Hernia	Mar 20, 1922
Meehan, Thomas	Private	H, 6th Penn. Cav.	36	Ireland	69	72 00	Senility	Dec. 31, 1902
Melody, Hugh J.	Coal Passer	U. S. Navy	118	California	41	15 00	Rheumatism	Nov. 9, 1909
Mercer, John	Private	L, 1st Cal. Cav.	28	Virginia	72	50 00	Chronic bronchitis	April 28, 1904
Merriman, Elijah R.	Captain	F, 5th W. Va. Inf.	37	Pennsylvania	83	72 00	Age	Aug. 5, 1919
Metzger, Alfred	Private	I, 155th Ind. Inf.	6	Indiana	68	50 00	Age	April 6, 1915
Meyer, Bruno	Private	C, 8th Cal. V. Inf.	7	Germany	56	12 00	Rheumatism	May 5, 1914
Meyer, Frederick	Private	K, 7th U. S. Inf.	59	Missouri	65	20 00	Age	Sept. 29, 1914
Meyer, Gustave	Private	E, 1st Neb. V. Inf.	14	Wisconsin	48	15 00	G. S. W., right knee	Mar. 30, 1913
Meyer, John	Sergeant	E, 1st U. S. Cav.	60	Germany	60		Rheumatism	Nov. 28, 1913
Meyer, William F.	Private	A, 1st Cal. Hy. Art.	16	Michigan	49	18 00	Heart trouble	May 14, 1917
Mikulich, Jacob C.	Ord. Seaman	U. S. Navy	9	Austria	66	50 00	Rheumatism	Oct. 3, 1909
Milbourne, Harry E.	Private	B, 5th Md. V. Inf.	5	Maryland	53	30 00	Chronic bronchitis	Jan. 19, 1923
Miller, Jacob	Private	M, 6th Ohio Cav.	20	Ohio	64	50 00	Rupture	July 7, 1905
Miller, John	Private	B, 1st Wash. Ter. Inf.	36	Wisconsin	71	50 00	Throat trouble	April 24, 1916
Miller, John J.	Private	Hosp. Corps, U. S. A.	36	New York	40	10 00	Ear trouble	Dec. 4, 1916
Miller, Silas H.	Private	F, 12th Ind. Cav.	23	Pennsylvania	82	50 00	Age	July 1, 1922
Milligan, Henry	Private	B, 48th Iowa Inf.	4	Ohio	72	50 00	Rheumatism	July 16, 1920
Mills, Andrew B. V.	Private	E, 23d N. Y. Inf.	24	Pennsylvania	48	50 00	General debility	Aug. 1, 1891
Moesser, Ulysses S.	Corporal	F, 35th U. S. V. Inf.	19	Utah	57	12 00	Hemorrhoids	Jan. 18, 1923
Moir, George	Private	B, Utah Lt. Art.	4	Scotland	62	24 00	Age	Dec. 6, 1910
Monaghan, David M.	Landsman	U. S. Navy	24	Ireland	76	50 00	Age	Jan. 19, 1921
Monahan, William	Private	A, 2d N. Y. Hy. Art.	6	Ireland	70	72 00	Blind	Oct. 27, 1908
Monroe, Charles P.	Private	M, 1st Mont. V. Inf.	15	Maryland	35	30 00	Stomach trouble	April 14, 1901
Moody, William H.	Private	I, 9th Me. Inf.	45	Massachusetts	76	50 00	Age	Dec. 16, 1919
Mooney, Francis	Private	B, 71st Penn. Inf.	28	Ireland	73	50 00	Age	Sept. 1, 1915

Moore, Egbert	Private	F, 24th U. S. Inf. etc.	87	Alabama	39		Malarial poisoning	Nov. 24, 1919
Moore, Frank A.	Private	D, 1st Cal. V. Inf.	17	Minnesota	59	15 00	Gastric disturbance	June 18, 1923
Moore, John W.	Private	A, 7th U. S. Cav. etc.	15	Connecticut	60	12 00	Hernia	July 6, 1922
Moore, Michael G.	Private	F, 3d U. S. Inf.	16	Ireland	76		Injury to hip	May 10, 1922
Morlan, Robert J.	Corporal	I, 2d U. S. V. Engrs.	11	Ohio	62	20 00	Rheumatism	June 19, 1923
Moran, Michael	Private	E, 7th U. S. Cav. etc.	84	England	60		Results of influenza	April 18, 1923
Morris, John	Private	A, 99th N. Y. Inf.	37	Russia	63	50 00	Rheumatism	Dec. 8, 1903
Morrison, Fred P.	Corporal	E, 6th Cal. V. Inf.	8	New Hampshire	48	12 00	Pleurisy	Sept. 30, 1910
Morton, Charles H.	Private	F, 6th Cal. V. Inf.	5	Connecticut	59	24 00	Lumbago	Aug. 9, 1916
Moser, Henry P.	Private	G, 40th U. S. V. Inf.	18	Indiana	52		Gastritis	Mar. 7, 1921
Moyers, John A.	Corporal	C, 8th Tenn. Inf.	27	Tennessee	81	50 00	Age	Mar. 11, 1921
Muller, Frederick	Private	Hosp. Corps, U. S. A.	12	New Jersey	50	24 00	Sciatica, etc.	Aug. 27, 1908
Muller, Fritz A.	Ord. Seaman	U. S. Navy	120	Germany	48	18 00	Rheumatism	Mar. 11, 1910
Mullins, William	Sergeant	L, 4th U. S. Inf. etc.	42	Kentucky	56	24 00	Chronic bronchitis	July 8, 1921
Murbach, Albert	Sergeant	19, Sig. Corps, U. S. A.	17	Wyoming	43		Nervous break down	April 3, 1917
Murphy, Arthur	Private	C, 1st Cal. V. Inf.	15	California	43	12 00	Fracture right leg	Aug. 22, 1922
Murphy, Daniel	Coal Heaver	U. S. Navy	36	Ireland	77	50 00	Age	Dec. 8, 1919
Murphy, John	Artificer	C, Penn. Lt. Art.	5	Illinois	43	12 00	Rheumatism	Jan. 3, 1911
Murphy, Patrick	Private	B, 2d U. S. Art.	53	Ireland	67		Rupture	May 20, 1913
Murphy, Richard A.	Sergeant	B, 2d Cal. Cav.	18	New York	70	50 00	Age	May 22, 1916
Murray, George W.	2d Lieut.	K, 1st N. Y. Mtd. Rifles	38	New York	75	50 00	Stomach trouble	July 14, 1917
Murray, Richard	Private	A, 12th U. S. Inf.	16	Maine	52		Ulcer of foot	Feb. 17, 1922
Myers, Joseph A.	Private	L, 3d U. S. Art.	7	D. C.	52		Chronic rheumatism	Oct. 1, 1921
Nagle, James	Private	A, 1st Cal. Hy. Art.	16	California	50	12 00	Hernia	Jan. 9, 1923
Neilan, Joseph	Private	H, 1st Cal. V. Inf.	16	Ireland	48	12 00	Lumbago	Feb. 4, 1909
Nelson, John	Private	I, 3d Me. Inf.	14	Maine	73	50 00	Rheumatism	Oct. 13, 1915
Nelson, Peter A.	Drummer Boy	B, 19th Wis. Inf.	12	Norway	73	72 00	Age	June 23, 1922
Nepp, George W.	Private	I, 1st Cal. V. Inf.	18	Ohio	45	30 00	Loss of left arm	Nov. 5, 1920
Nesten, Charles	Corporal	D, 57th Ill. Inf.	45	Sweden	79	72 00	Age	Jan. 11, 1923
Newell, Henry D.	Private	E, 6th Mass. V. Inf. etc.	28	New Jersey	41	24 00	Malaria	Nov. 16, 1917
Nice, John W.	Private	C, 25th Wis. Inf.	34	Illinois	75	72 00	Rheumatism	Sept. 6, 1920
Nigh, Theodore A.	Private	K, 143d Penn. Inf.	36	Pennsylvania	70	50 00	Rheumatism	July 14, 1914
Noonan, James J.	Private	A, 3d U. S. Engrs.	9	D. C.	45		Kidney trouble	Mar. 29, 1922
Noonan, John F.	Fireman	U. S. Navy	41	New York	54		Rheumatism	Jan. 8, 1923
Nordyke, Americus T.	Private	A, 2d Cal. Cav.	14	Iowa	78	50 00	Age	Mar. 25, 1921
Norman, Newton	Private	L, 16th Mo. Cav.	10	Missouri	72	50 00	Dysentery	Jan. 25, 1916
Nyblome, Carl	Musician	Band, 3d Ill. V. Inf.	8	Illinois	54	12 00	Fractured left leg	May 21, 1923
Oates, Charles	Ord. Seaman	U. S. Navy	36	South Africa	46	30 00	Tuberculosis	June 28, 1923
O'Brien, John S.	Sergeant	A, 1st Cal. Hy. Art.	16	Ireland	48	24 00	Kidney trouble	Dec. 29, 1902
O'Connor, Michael	Corporal	K, 2d La. V. Inf.	8	Louisiana	43	12 00	Varicose veins	Feb. 4, 1912
O'Donnell, Patrick	Private	E, 9th Md. Inf.	10	Ireland	73	50 00	Age	Sept. 19, 1895
O'Keefe, David P.	Wagoner	F, 5th U. S. Cav. etc.	108	Ireland	50		Malaria	Oct. 5, 1921
O'Keefe, Patrick	Private	F, 14th U. S. Inf. etc.	94	New York	51	24 00	Rheumatism	Dec. 26, 1918

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA—Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Olger, George W.	Private	A, 38th Wis. Inf.	16	New York	71	$50 00	Rheumatism	Oct. 21, 1915
Osborn, Ambrose A.	Fireman	U. S. Navy	15	Connecticut	72	50 00	Age	Dec. 12, 1916
Osterberg, John F.	Fireman	U. S. Navy	39	Sweden	69		Age	Dec. 13, 1915
Parish, Mortimer	Private	D, 3d Mich. Inf. etc.	32	New York	73	50 00	Age	July 13, 1912
Parkerson, Burrell	Corporal	D, 6th Wis. Inf.	48	England	82	50 00	Age	Feb. 20, 1922
Partridge, Edward M.	Private	A, 3d Miss. V. Inf.	8	Michigan	52	12 00	Rheumatism, deafness	Nov. 24, 1922
Pascoe, William C.	Corporal	I, 1st Cal. Cav.	32	England	78	50 00	General debility	July 17, 1919
Pennington, Darius C.	Private	D, 11th Mich. Inf.	8	Michigan	74	50 00	Age	Feb. 19, 1923
Penturf, Michael	Private	G, 9th Kans. Cav.	39	Missouri	51	72 00	Rheumatism	Aug. 9, 1896
Peter, Simon	Sergeant	K, 98th Ohio Inf.	34	Ohio	69	50 00	Age	May 31, 1914
Phelan, George W.	Private	L, 21st Kans. V. Inf.	7	New York	58	30 00	Lung trouble	Oct. 9, 1920
Phelan, John	Coal Passer	U. S. Navy	14	Ireland	65	72 00	Sciatica	Mar. 21, 1909
Phelan, Michael	Private	E, 1st Mont. V. Inf.	16	Ireland	48	24 00	Rheumatism	Aug. 10, 1905
Phillips, James N.	Corporal	K, 28th N. Y. Inf.	24	New York	79	50 00	Age	April 9, 1923
Phillips, Albert T.	Private	E, 8th Cal. V. Inf.	7	California	45		G. S. W., hip	Jan. 3, 1923
Pidge, William C.	Private	1st Batty., Wis. L. A.	36	New York	75	50 00	Age	Mar. 14, 1918
Piergentili, Nazzareno	Private	B, 37th Bat. U. S. Gds.	8	Italy	34		Paralysis	Feb. 21, 1922
Pierpoint, Frank	1st Sergeant	U. S. Marine Corps	60	England	49	50 00	Loss left foot	Sept. 10, 1913
Pierpont, John B.	Private	K, 10th Conn. Inf.	37	Canada	59	50 00	Partial paralysis	July 6, 1904
Pile, George A.	Private	B, 6th Cal. V. Inf. etc.	41	California	46	12 00	Injury to back	June 22, 1920
Pilger, John	Private	E, 9th Ohio Cav. etc.	36	Germany	58	50 00	Varicose veins	Oct. 24, 1902
Pippey, Edward W.	Private	B, 36th Mass. Inf.	34	Prince Ed. Isl.	57	50 00	Rheumatism	May 16, 1893
Plumb, Edwin W.	Private	M, 2d U. S. Art.	36	Connecticut	70	50 00	Kidney trouble	Oct. 14, 1919
Poole, Fred R.	Corporal	C, 1st Colo. V. Inf.	15	Missouri	48	15 00	Rheumatism, hernia	Feb. 3, 1923
Poor, John A.	Corporal	B, 5th Mass. Inf.	11	Massachusetts	81	72 00	Age	June 6, 1922
Pope, Edward E.	Private	H, 1st N. D. V. Inf.	16	New York	51	18 00	Bladder trouble	Feb. 6, 1922
Powell, Edward (alias Ed Powers)	Private	F, 98th Penn. Inf.	2½	Ireland	79		Rheumatism	May 6, 1922
Prade, Arthur	Private	I, 2d U. S. V. Cav.	5	Massachusetts	47	30 00	Hemorrhoids	May 2, 1921
Preston, Henry W.	Seaman	U. S. Navy	4	Michigan	50		Poor eyes	Nov. 9, 1920
Price, George J.	Private	A, Oregon Lt. Art.	3	Ohio	55		Hernia	Dec. 21, 1920
Price, James H.	Nurse	U. S. Navy	30	Pennsylvania	53	72 00	Age	May 18, 1898
Prior, Don	Private	L, 1st Cal. V. Inf.	17	California	41	15 00	Paralysis	Sept. 21, 1917
Pryor, Jeremiah	Private	C, 2d Cal. Inf.	12	Missouri	69	50 00	Rheumatism	July 25, 1912
Putnam, Charles C.	Private	B, 3d U. S. Art. etc.	36	Massachusetts	62	50 00	Rupture	Jan. 17, 1910
Putnam, Elias G.	Sergeant	H, 107th N. Y. Inf.	34	New York	82	50 00	Age	May 21, 1923

Rainford, William J.	Private	D, 1st Cal. Hy. Art.	13	England	57	24 00	Injury to left leg	Aug. 9, 1922
Randall, Warren G.	Private	D, 1st Me. Cav.	19	Maine	58	50 00	Rheumatism	Sept. 30, 1904
Rankin, George W.	Private	B, 135th Ohio N. G. Inf.	8	Ohio	73	50 00	Age	Jan. 16, 1923
Raubach, Conrad	Sergeant	F, 103d N. Y. Inf.	27	Prussia	73	50 00	Kidney disease	Dec. 6, 1912
Rea, William B.	Private	B, 1st Idaho V. Inf.	15	Michigan	59	12 00	Rheumatism	May 11, 1917
Reagan, Nicholas	Sergeant	C, 19th U. S. Inf. etc.	97	Canada	51	12 00	Chronic catarrh	Sept. 30, 1916
Reardon, John	Landsman	U. S. Navy	27	Missouri	52	50 00	Rheumatism	Nov. 23, 1895
Reay, Charles G.	Corporal	M, 1st Cal. V. Inf.	13	California	46	30 00	Nervous contraction	July 30, 1920
Rector, Solomon W.	Private	I, 2d U. S. Engrs.	4	Missouri	51	10 00	Hernia	Oct. 23, 1920
Redmond, Michael	Private	H, 32d Mass. Inf.	36	Massachusetts	51	72 00	Rheumatism	Feb. 13, 1895
Regan, Thomas	Private	A, 1st Nev. V. Inf.	3	Illinois	55	.....	Nephritis	June 17, 1913
Reid, Thomas	Private	H, 27th U. S. Inf.	36	New Jersey	42	12 00	Fistula	Feb. 17, 1914
Reilly, Charles F.	Private	C, 46th U. S. V. Inf.	20	Rhode Island	50	.....	Neuritis, arms	July 25, 1922
Reinville, Joseph	Private	F, 1st Ill. L. A.	29	Vermont	55	72 00	Partial blindness	Nov. 8, 1900
Reynolds, Floyd M.	Private	M, 43d U. S. V. Inf.	21	Virginia	52	18 00	Age	July 18, 1908
Reynolds, Thomas	Private	C, 1st Cal. H. A. etc.	96	New York	50	.....	Rheumatism	Dec. 15, 1911
Rhoda, William C.	Private	B, 144th Ill. Inf.	11	Illinois	75	50 00	Rheumatism	July 23, 1918
Rice, William H.	Private	B, 1st Cal. H. A.	6	California	43	12 00	Rheumatism	Dec. 21, 1911
Richardson, Andrew J.	Private	H, 8th Ill. Cav.	8	Illinois	51	50 00	Lumbago	April 11, 1896
Riley, Elias F.	Private	C, 7th Va. Inf.	4	Virginia	76	50 00	Rheumatism	April 28, 1916
Ripley, William H.	Private	E, 36th Ind. Inf.	36	Ohio	81	50 00	Age	May 21, 1923
Risk, Robert	Private	C, 24th Mass. Inf.	36	Massachusetts	50	50 00	General debility	Mar. 20, 1894
Ritchie, William H.	1st Cl. Boy	U. S. Navy	41	New York	61	50 00	Lumbago	July 11, 1909
Roberts, Harry E.	Corporal	Band, 36th U. S. V. Inf.	45	Iowa	45	17 00	Broken shoulder	Oct. 2, 1915
Robinson, Charles H.	Captain	A, 8th U. S. Col. H. A. etc.	21	New York	87	50 00	Age	Sept. 1, 1921
Robinson, John M.	Major	Surgeon, U. S. Vols.	34	Ohio	86	72 00	Age	July 3, 1922
Robinson, Joseph F.	Private	B, 1st Cal. V. Inf. etc.	29	Kentucky	56	15 00	Ulcer of rectum	Nov. 11, 1911
Rochford, Henry	Private	H, 12th U. S. Inf.	36	Ireland	70	.....	Lumbago	Nov. 22, 1913
Rogers, George F.	Private	H, 15th Ill. Cav. etc.	10	Illinois	69	50 00	Double rupture	Dec. 15, 1914
Rogers, William	Private	F, 2d Cal. Inf.	18	Massachusetts	66	50 00	Chronic gastritis	Nov. 9, 1915
Roggers, Edward F.	Seaman	U. S. Navy	271	Jamaica	70	37 00	Rheumatism	May 19, 1922
Rohr, Robert	Private	M, 109th U. S. Inf.	24	Switzerland	35	.....	Injury to right foot	June 21, 1921
Roque, Emanuel	Private	F, 12th U. S. Inf.	60	Azores	65	20 00	Rheumatism	June 17, 1920
Rosen, James	Private	G, 2d U. S. V. Inf.	12	Russia	49	15 00	Rheumatism	Dec. 19, 1912
Ross, Charles M.	Private	B, 10th Ind. Cav. etc.	21	Indiana	45	72 00	Injury to right knee	April 12, 1892
Rowan, John	Sergeant	D, 2d Tenn. Cav.	34	Tennessee	75	50 00	G. S. W., left leg	Aug. 13, 1917
Rowe, Albert	Musician	I, 53d Ind. V. V. Inf.	17	England	72	50 00	Age	June 15, 1922
Ruggles, Nathaniel T.	Private	C, 1st Cal. Cav.	35	Indiana	83	72 00	Age	May 29, 1923
Russell, John F.	Private	E, 6th Cal. V. Inf.	7	Alabama	61	12 00	Internal hemorrhoids	Aug. 5, 1921
Rutter, Thomas H.	Farrier	M, 1st N. Y. Cav.	7	England	56	72 00	Chronic diarrhoea	April 28, 1894
Rutherford, Joseph	Private	C, 122d Ill. Inf.	35	Illinois	73	50 00	Age	Oct. 6, 1916
Ryder, Vaughan E.	Private	D, 7th U. S. Art. etc.	45	Canada	45	12 00	Broken ankle	Oct. 9, 1918
Saare, Alfred H.	Private	F, 3d Neb. V. Inf.	10	Wisconsin	51	30 00	Infected right toe	Nov. 2, 1922

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA—Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Sage, Henry P.	Landsman	U. S. Navy	36	Connecticut	64	$50 00	General debility	Aug. 1, 1913
Sage, Philo G.	Private	I, 4th Iowa Cav.	45	New York	82	50 00	Age	July 16, 1918
Sanders, William	Private	H, 6th N. Y. Inf.	25	New York	53	50 00	Heart disease	June 15, 1894
Saunders, Julius P. (alias Julius Erb)	Sergeant	H, 17th U. S. Inf. etc.	227	Germany	65	20 00	Rheumatism	June 7, 1920
Sawyer, Charles A.	Private	D, 10th Vt. Inf.	35	Vermont	67	50 00	Rheumatism	June 15, 1911
Sawyer, Llewellyn	Private	A, 17th Mass. Inf.	5	Maine	67		General debility	April 7, 1910
Scallen, Joseph M.	Private	B, 13th Minn. V. Inf.	11	Minnesota	48	12 00	Deformed foot	Mar. 7, 1923
Scheifly, John	Q. M. Sergeant	K, 29th U. S. V. Inf. etc.	34	Illinois	59	12 00	Rheumatism	April 11, 1917
Schenck, James P.	Cook 1st Cl.	U. S. Navy	108	Illinois	63	30 00	Rheumatism	April 9, 1919
Schmidt, John C. (alias John Smith)	Private	G, 2d Cal. Inf.	36	Germany	76	50 00	Rheumatism	July 26, 1914
Schmitt, Paul	Seaman	U. S. Navy	82	France	56	12 00	Rheumatism	Dec. 9, 1920
Schmitz, William	Private	34th Co., C. A. C., U. S. A.	36	Wisconsin	40		Rheumatism	Sept. 7, 1920
Schneider, Carl	Private	F, 4th U. S. Cav.	36	Germany	49	30 00	Partial blindness	Feb. 1, 1914
Schneider, Jacob	Private	I, 3d N. Y. Inf.	7	Germany	72	72 00	Broken wrist	Feb. 8, 1919
Schultz, Frederick W.	Private	C, 1st Cal. V. Inf.	13	Iowa	60	18 00	Dysentery	Nov. 5, 1912
Schutz, Gottlob	Private	K, 3d U. S. V. Cav. etc.	22	Germany	45		Rheumatism	Jan. 6, 1921
Scott, Alfred I.	Private	C, 6th Cal. V. Inf.	4	Iowa	54	12 00	Umbilical hernia	Jan. 10, 1923
Scott, William	Private	B, 5th Conn. Inf. etc.	56	New York	74	50 00	Age	Mar. 16, 1921
Searcy, William E.	Corporal	D, 2d Ore. V. Inf.	16	Kansas	36	15 00	G. S. W., buttock	Feb. 15, 1910
Segesser, Ulrich	Private	I, 35th Mass. Inf.	14	Switzerland	65	50 00	Rheumatism	July 6, 1908
Seney, Edward J.	Private	K, 14th U. S. Inf. etc.	72	Illinois	48	12 00	Rheumatism	June 21, 1921
Sexton, James	Private	A, 1st Nev. V. Inf.	3	Ireland	50	15 00	Rheumatism	May 4, 1910
Seymour, Harry C.	N. C. S.	37th U. S. V. Inf.	18	Canada	62	18 00	Rheumatism	Nov. 19, 1917
Seyser, John	Private	U. S. M. C.	18	California	25		Rheumatism, acute	Sept. 18, 1922
Shade, George W.	Private	B, 4th U. S. Art. etc.	96	Ohio	69	20 00	Broken hip joint	Dec. 19, 1918
Shafer, Albert	Private	C, 1st Mich. Cav.	19	Ohio	62	50 00	Liver and heart trouble	Mar. 25, 1909
Shaffer, William F.	Landsman	U. S. Navy	50	Pennsylvania	36		Rheumatism	Sept. 9, 1910
Shanahan, Michael	Private	H, 34th U. S. V. Inf.	20	Michigan	61		Rheumatism, chronic	Jan. 23, 1922
Shannon, William H.	Private	15th Batty. Ind. L. A. etc.	34	Indiana	64	50 00	Age	Feb. 5, 1913
Shaw, Oliver M.	Private	K, 59th Ill. Inf.	12	Illinois	65	50 00	Lame ankle	Jan. 3, 1911
Shaw, Wilson A.	Private	E, 8th U. S. Inf.	60	California	61	20 00	Rheumatism	Aug. 29, 1921
Sheridan, John	Private	B, 2d N. Y. Prov. Cav.	7	Ireland	68	50 00	Rheumatism	Jan. 5, 1912
Sherwood, Edmund	Corporal	Band, 7th U. S. Inf.	33	Pennsylvania	53	18 00	Hernia	Mar. 6, 1911

Shippey, John R.	Private	E, 11th Ind. Inf. etc.	39	New York	80	72 00	Blind	Feb. 14, 1922
Short, Frank J.	Private	M, 15th U. S. Inf.	36	New Jersey	42	14 00	Injury to right leg	Aug. 8, 1917
Shortridge, Sanford	Private	F, 13th Kans. Inf.	34	Indiana	80	50 00	Age	May 16, 1921
Shottenkirk, Chauncey F.	Corporal	I, 21st Ill. Inf.	25	New York	69	50 00	Age	Nov. 19, 1913
Sinclair, Benjamin	Musician	A, 21st U. S. Inf.	180	West Virginia	73	20 00	Age	Feb. 17, 1923
Sinclair, Clarence	Corporal	U. S. M. C.	36	New York	46		Rheumatism	Oct. 21, 1921
Skeels, Spencer L.	Private	A, 150th Ohio Inf.	17	New York	65	50 00	Rheumatism	Jan. 5, 1910
Slade, Frank M.	1st Lieut.	C, 12th Ohio Inf.	39	Ohio	65	50 00	Hemorrhoids	Sept. 15, 1904
Slease, Jacob	Private	C, 139th Penn. Inf.	34	Pennsylvania	74	50 00	Age	Nov. 21, 1920
Smallwood, John W.	Private	12th Batty., U. S. F. A.	36	Indiana	54	18 00	Injury to shoulder	Dec. 30, 1922
Smart, Charles O.	Private	B, Penn. L. A.	7	Pennsylvania	52		Rheumatism	Nov. 13, 1922
Smith, Anton	Private	L, 2d U. S. V. Engrs.	11	Norway	58		General debility	June 20, 1921
Smith, Charles P.	Private	I, 3d N. Y. Inf. etc.	45	Vermont	76	50 00	Age	Dec. 9, 1920
Smith, Frank C.	Private	H, 13th Minn. V. Inf.	14	Iowa	48	15 00	Kidney trouble	June 2, 1921
Smith, Harry H.	Corporal	K, 8th Cal. V. Inf.	7	California	58	24 00	Malaria	Dec. 4, 1922
Smith, Lee C.	Private	M, 5th Md. V. Inf. etc.	23	Maryland	41	30 00	Tuberculosis	April 10, 1915
Smith, Thomas E.	Landsman	U. S. Navy	11	New York	61		Rheumatism	Mar. 26, 1923
Smith, William	Private	A, 15th Penn. Cav.	15	New Hampshire	76	50 00	Age	May 26, 1922
Smith, William T.	Private	36th Co., C. A. C., U. S. A.	34	North Carolina	57		Malaria	Jan. 22, 1919
Snow, George V.	Musician	E, 65th Ill. Inf.	36	Wisconsin	60	50 00	Age	Aug. 11, 1908
Sommers, Otto	Private	H, 7th Ill. V. Inf.	5	Germany	51	30 00	Rheumatism, malaria	April 24, 1915
South, John	Private	L, 43d U. S. V. Inf.	20	Kansas	39	17 00	Tuberculosis	Mar. 7, 1916
Spaulding, Charles A.	Musician	G, 39th Mass. Inf.	44	Massachusetts	77	50 00	Age	June 22, 1923
Spaulding, Dinwidie W.	Private	B, 6th Cal. V. Inf.	5	California	61		Paralysis, left side	May 19, 1922
Spaulding, John T.	Private	K, 1st Cal. V. Inf.	18	Wisconsin	67	18 00	Injury right knee	Feb. 24, 1920
Spencer, Benj. F.	Corporal	E, 9th Maine Inf.	46	Maine	80	72 00	Age	Jan. 7, 1922
Sprick, Henry	Private	E, 1st U. S. Cav.	60	Germany	62	20 00	Frozen feet	Dec. 5, 1914
Spurgeon, Felix	Private	F, 2d Ohio Hy. Art.	24	Ohio	53	72 00	Rheumatism	Dec. 21, 1899
Squibb, Samuel	Private	F, 7th Ind. Cav.	31	Ohio	66	50 00	Rheumatism	Dec. 3, 1911
Stabler, John	Private	A, 2d Bat. Cav., O. N. G.	2	Germany	82		Defective eyesight	June 18, 1914
Stahl, Fred	Private	F, 14th U. S. Inf. etc.	31	Pennsylvania	46		Rheumatism	Oct. 10, 1921
Stanley, Charles	Private	C, 3d U. S. Art.	68	New York	59	30 00	Hemorrhoids, external	Feb. 1, 1916
Stanton, Frederick P.	Corporal	C, 5th U. S. Cav.	120	Pennsylvania	65	20 00	Age	Oct. 5, 1921
St. Clair, Edward C.	Private	H, 1st U. S. V. Cav. etc.	29	Louisiana	57		Gastralgia	July 27, 1922
Steele, Henry C.	Private	D, 7th Iowa Inf.	17	Iowa	70	72 00	Bronchitis	June 7, 1914
Stephenson, Ira B.	Private	C, 20th U. S. Inf. etc.	25	Indiana	43	20 00	Rheumatism, malaria	Jan. 15, 1903
Stevens, Sim	Private	E, 20th Kans. V. Inf.	15	Missouri	48	30 00	Chronic bronchitis	Jan. 25, 1922
Stevens, Charles C.	Private	D, 6th Cal. V. Inf.	5	New Hampshire	59	12 00	Asthma	Mar. 14, 1923
Stewart, James A.	Sergeant	105th Co., C. A. C.	36	Pennsylvania	35	6 00	Injured knee	Dec. 2, 1920
Stewart, John T.	Private	I, 49th Mo. Inf.	11	Kentucky	68	50 00	Rheumatism	Jan. 14, 1918
Stewart, Joseph M.	Private	I, 40th Wis. Inf.	3	Pennsylvania	67	50 00	Rheumatism	April 18, 1914
Stickoffer, Julius H.	Saddler	L, 8th U. S. Cav.	60	Switzerland	49	10 00	Heart disease	Feb. 17, 1895
Stolle, William	Private	3d Batty., N. J. L. A.	16	Prussia	52	50 00	Kidney disease	Sept. 24, 1892

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA—Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Storm, Anton	Private	C, 19th U. S. Inf. etc.	75	Denmark	63		Rheumatism, chronic	Sept. 20, 1921
Strait, Hugh C.	Sergeant	F, 30th U. S. Inf.	24	Missouri	51	$18 00	Nervous breakdown	Aug. 10, 1922
Sublette, John H.	Private	C, 9th Ill. Inf.	9	Illinois	45		Lung trouble	Jan. 9, 1921
Sullivan, Adrian A.	Musician	Band, 14th U. S. Inf.	73	Michigan	41	12 00	Rheumatism	Feb. 2, 1911
Sullivan, Patrick	Private	B, 1st U. S. V. Engrs.	6	Vermont	56		Rheumatism	Jan. 22, 1921
Sutherland, Demotte W.	Private	A, 8th Ill. Inf.	13	Illinois	63	50 00	Lead poisoning	May 24, 1911
Talbot, John	Private	L, 2d U. S. Engrs.	11	England	60	24 00	Sciatica	Nov. 2, 1912
Tanner, Elijah	Private	F, 174th Ohio Inf.	10	Ohio	64	50 00	Rheumatism	Jan. 1, 1911
Tateburg, Ernest W.	Sergeant	I, 39th Ill. Inf. etc.	50	Germany	79	50 00	Age	Nov. 17, 1911
Taylor, Samuel W.	Private	E, 5th Me. Inf.	37	Maine	69	50 00	General debility	Oct. 12, 1913
Taylor, Thomas H.	Private	G, 17th Mass. Inf.	48	England	54	50 00	Rheumatism	July 4, 1894
Taylor, William H. H.	Private	K, 6th Cal. Inf.	14	Indiana	58	50 00	Heart trouble	May 15, 1905
Templeton, Charles S.	Private	K, 17th Wis. Inf.	5	Ohio	73	50 00	Age	Jan. 17, 1917
Tennant, Frank T.	Corporal	F, 1st Ill. Cav.	6	New York	61	12 00	Lumbago	Dec. 13, 1920
Tenzer, Alfred G.	Private	A, 39th U. S. V. Inf.	19	New York	48		Tuberculosis	Feb. 26, 1923
Thomas, Alfred J.	Private	A, 2d Cal. Cav.	22	Wales	74	50 00	Dislocated shoulder	Jan. 6, 1904
Thomas, George H.	Private	C, 2d Ill. Inf.	12	Kentucky	49	30 00	Partial paralysis	Nov. 13, 1918
Thomas, Lewis	Private	M, 1st Ind. H. A.	28	Missouri	58	50 00	Rheumatism	Jan. 22, 1904
Thompson, Charles E.	1st Lieut.	C, 1st Cal. V. Inf.	16	California	62	12 00	Fractured leg	May 26, 1919
Thompson, Ralph A.	Private	I, 6th Kans. Cav.	14	Canada	73	50 00	Age	July 7, 1921
Thorp, John B.	Private	B, 2d Cal. Inf.	17	Texas	72	72 00	Hemorrhoids	Sept. 22, 1918
Thurston, George	Private	H, 86th Ill. Inf.	28	Indiana	65	50 00	Rupture	Feb. 10, 1910
Timmins, Bernard	1st Cl. Oiler	U. S. Navy	19	Ireland	64	24 00	Age	Feb. 21, 1923
Tool, John	Private	D, 11th Mass. L. A.	7	Pennsylvania	55	50 00	Piles	Jan. 1, 1905
Townsend, Ross	Master at Arms	U. S. Navy	37	California	52		Defective left leg	May 28, 1915
Trembly, Cyprian	Private	I, 20th Mass. Inf.	12	Canada	63	50 00	Lame left shoulder	Feb. 10, 1910
Tremper, Edgar	Corporal	K, 2d Wis. Cav.	47	New York	69	50 00	Rupture	Mar. 22, 1912
Trepanier, Louis	Private	H, 11th Me. Inf.	6	Canada	76	50 00	Age	Feb. 7, 1923
True, Charles S. (alias Charles T. Shaw)	Landsman	U. S. Navy	14	Maine	71	50 00	Partial blindness	Sept. 13, 1918
Tuck, John W.	Private	G, 28th Ill. Inf.	39	Maine	65	50 00	Partial paralysis	Sept. 27, 1910
Tucker, William B.	Private	H, 64th Ohio Inf.	8	Ohio	73	72 00	Age	Feb. 15, 1915
Tussee, William	Private	F, 50th Mo. Inf.	12	Missouri	66	50 00	Partial paralysis	July 16, 1911
Turner, Joseph R.	Bugler	E, 8th U. S. Inf.	90	Maryland	55	20 00	Appendecortomy	Dec. 16, 1908
Tuttle, Smith P.	Sergeant	F, 1st Neb. Cav.	53	Illinois	81	50 00	Sunstroke	June 21, 1923

Tyson, Robert A.	Private	F, 47th Ind. Inf.	50	Pennsylvania	81	50 00	Age	July 6, 1921
Ullman, John	Private	C, 8th Kans. Inf.	22	Germany	60	50 00	Kidney trouble	May 3, 1901
Ursenbach, Louis F.	Corporal	Band, 3d U. S. Art.	31	Switzerland	35	15 00	Bronchitis	Dec. 12, 1901
Valpey, Charles C.	Private	E, 2d Cal. Cav.	20	Nova Scotia	66	50 00	Age	May 15, 1913
Vandaveer, William	Private	E, 7th Cal. V. Inf.	6	Illinois	49		Lumbago	Aug. 27, 1911
Veliz, David E.	Musician	U. S. Navy	258	Chili	49	47 86	Rheumatism, chronic	June 22, 1918
Vining, Croney	Private	H, 6th Ohio V. Inf. etc.	33	Ohio	42	18 00	Knee trouble	Jan. 5, 1921
Volger, Remigius	Private	I, 41st N. Y. Inf.	24	Switzerland	65	50 00	Rheumatism	Dec. 31, 1909
Voorhees, George L.	Sergeant	D, 22d Wis. Inf.	34	New York	75	72 00	Age	July 1, 1916
Voss, Charles T.	Private	E, 8th U. S. Inf.	36	New York	48		Neuritis	May 1, 1922
Waite, Fred O.	Private	H, 1st Cal. V. Inf.	15	California	65	12 00	Age	May 8, 1923
Walker, Lester E.	Sergeant	F, 4th U. S. Art.	60	New York	70	20 00	Age	Jan. 24, 1921
Walker, James A.	Private	30th Co. 5, U. S. M. C.	24	Illinois	31		Boils	May 29, 1923
Walker, William B.	Corporal	H, 3d U. S. Art.	60	Georgia	49		Myocarditis	Jan. 29, 1913
Wallin, William	Private	Henshaw's Baty., Ill. L. A.	33	Illinois	73	50 00	Age	Oct. 22, 1917
Wallenburg, Ossian J.	Private	H. C., U. S. A.	10	Sweden	53	15 00	Rupture	Nov. 15, 1921
Walsh, John J.	Corporal	L, 43d U. S. V. Inf.	20	Canada	52	30 00	Tuberculosis	May 10, 1923
Wangler, Anton	Private	B, 43d Ill. Inf.	36	Germany	76	50 00	Atrophoid leg	Dec. 5, 1914
Ward, Charles H.	Private	C, 1st Cal. H. A.	7	California	38	12 00	Rheumatism	Mar. 27, 1912
Warner, Albert J.	Corporal	F, 13th Wis. Inf.	21	Wisconsin	77	50 00	Age	Oct. 27, 1921
Warren, Julian B.	Private	B, 1st Cal. H. A.	7	California	36	15 00	Partial deafness	May 12, 1916
Warwick, Guy	Musician	H, 2d U. S. Art.	36	Ireland	72		Heart trouble	April 6, 1920
Wassam, Charles L.	Private	E, 28th U. S. Inf.	36	Ohio	43		Injury to spine	Mar. 13, 1923
Watt, Joseph A.	Private	F, 14th Penn. Cav.	25	Pennsylvania	54	50 00	Fracture of ankle	May 17, 1899
Waymack, James T.	Private	H, 1st U. S. Cav.	21	Virginia	66	20 00	Age	April 30, 1923
Weaver, Lafayette	Private	F, 7th Ohio Inf.	4	Ohio	70	72 00	Lame back	Nov. 6, 1912
Weiman, Joseph F.	Private	C, 72d Ill. Inf.	20	Germany	69	50 00	Age	Sept. 30, 1916
Wells, William H.	Private	B, 8th Cal. V. Inf.	7	California	38		Failing sight	Sept. 19, 1912
Wentzell, Ellsworth	Private	E, 23d U. S. Inf.	36	New Jersey	60	12 00	Rheumatism	Jan. 6, 1923
Werly, Charles	Private	Ordnance Dept., U. S. A.	36	Switzerland	53		Heart trouble	Oct. 8, 1912
Werner, Gottlieb	Private	H, 54th N. Y. Inf.	55	Germany	58	50 00	Sore feet	June 4, 1899
Wescott, Harrison	Private	I, 7th Maine Inf.	30	Maine	73	50 00	Age	Mar. 28, 1916
West, Daniel J.	1st Lieut.	H, 1st Conn. Inf. etc.	45	New York	87	50 00	Age	June 8, 1918
Wetsell, George W.	Drummer	U. S. Navy	66	New York	57	50 00	Bronchitis	Nov. 30, 1902
Weykman, Peter	Corporal	G, 12th U. S. Inf.	36	Holland	50	12 00	Myocarditis	Sept. 21, 1912
Whalen, John C.	Private	C, 3d U. S. Cav. etc.	77	Massachusetts	43		General breakdown	Nov. 23, 1920
Whisler, Abraham	Private	K, 12th Ohio Inf.	50	Ohio	74	50 00	Age	May 15, 1915
Whitaker, Stanley O.	1st Sergeant	E, 4th U. S. Art.	60	New York	67	20 00	Age	July 22, 1921
White, Robert N.	Private	H, 8th Mo. Cav.	20	Missouri	73	50 00	Age	Jan. 4, 1921
White, Thomas F.	Private	D, 1st Nev. V. Inf.	3	Massachusetts	50	15 00	Injury, left arm	Sept. 16, 1908
White, Simon	Private	B, 5th U. S. Inf.	18	Michigan	42	30 00	Tuberculosis	Jan. 22, 1918
Whitlock, William H. H.	Corporal	F, 7th Cal. Inf.	16	Michigan	73	50 00	Rupture	Mar. 11, 1914
Whitney, Isaac	Private	M, 14th N. Y. H. A. etc.	33	New York	73	50 00	Age	Oct. 29, 1910

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA—Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Whittier, Marcellus	Private	A, 2d Cal. Cav.	12	Maine	69	$50 00	Rheumatism	Jan. 3, 1917
Widten, Charles	Seaman	U. S. Navy	97	Massachusetts	68	50 00	Rheumatism	Nov. 17, 1905
Wilbur, Julian E.	Private	I, 46th U. S. V. Inf.	20	Nebraska	53	30 00	Stomach trouble	Mar. 29, 1922
Wilcox, Charles	Private	I, 64th Ill. Inf.	16	Illinois	73	50 00	Age	Oct. 1, 1921
Wilkens, William L.	Private	B, 4th Va. V. Inf.	8	Virginia	48	24 00	Neurosis	Aug. 15, 1922
Wilkes, Blair	Private	I, 184th Ohio Inf.	7	Ohio	65	50 00	Rheumatism	April 5, 1911
Willcox, William H.	Captain	D, 95th N. Y. Inf.	16	New York	90		Age	July 29, 1922
Williams, Edward	Private	U. S. Marine Corps	41	Ohio	42		Fracture right ankle	July 3, 1908
Williams, Edward	Private	F, 33d Ill. Inf.	8	Illinois	63	50 00	Rheumatism	Sept. 29, 1909
Williams, John H.	Private	F, 4th U. S. Inf.	36	Massachusetts	53		Kidney trouble	Feb. 1, 1921
Williams, Walter J.	Shipwright	U. S. Navy	36	California	48	12 00	Hernia	Feb. 1, 1923
Wilson, Edward F.	Battn. Sgt. Major	22d U. S. Inf.	36	Massachusetts	63	12 00	Nervous breakdown	Nov. 20, 1920
Wilson, Hiram C.	Corporal	F, 18th Mo. Inf.	45	Missouri	70	50 00	G. S. W., right leg	Mar. 13, 1913
Wilson, James H.	Actg. Hos. Stwd.	Hosp. Corps, U. S. A.	8	Ohio	54	12 00	Chronic otitis	May 29, 1918
Wilson, James M.	Sergeant	A, 19th Kans. Cav.	6	Indiana	77	30 00	Age	Nov. 20, 1922
Wolter George	Private	U. S. M. C.	10	Utah	30		Gastralgia	July 5, 1921
Wood, James H.	1st Sergeant	E, 4th U. S. Art.	60	Kentucky	74	20 00	Age	Feb. 13, 1923
Wood, Theodore G.	Private	K, 32d Wis. Inf.	34	New York	79	50 00	Age	July 29, 1922
Woodard, James F.	Private	M, 1st Colo. Cav.	37	Missouri	76	50 00	Age	Oct. 4, 1916
Woodard, William	Private	A, 4th Va. V. Inf.	12	Virginia	48	15 00	Defective vision	Dec. 3, 1910
Woodward, Howard B.	Private	A, 22d Ill. Inf. etc.	39	Wisconsin	66	50 00	Loss left leg	Aug. 11, 1911
Woodward, Walter M.	Private	F, 1st Tenn. Mtd. Inf.	14	Tennessee	69	50 00	Rheumatism	May 22, 1916
Wortman, Isaac	Sergeant	B, 35th Mass. Inf.	34	Massachusetts	76	50 00	Age	Sept. 15, 1921
Wright, Benjamin F.	Private	D, 45th Iowa Inf.	4	Indiana	73	50 00	General debility	June 18, 1918
Writer, Orion E.	Private	I, 54th Mass. Inf.	37	Vermont	52	50 00	Disease of kidneys	Sept. 14, 1896
Yarrington, Thomas A.	Private	H, 3d U. S. Art.	14	Wisconsin	47		Rheumatism	Mar. 17, 1916
Yeatman, Paxton G.	Private 1st Cl.	3d U. S. V. Engrs.	12	Virginia	65	12 00	Age	Oct. 28, 1922
Yescas, Michael	Private	I, 35th U. S. V. Inf.	22	California	38		Rheumatism	April 6, 1914
Yohn, James	Private	H, 133d Penn. Inf. etc.	29	Pennsylvania	77	50 00	Age	Dec. 9, 1920
York, Michael A.	Private	F, 1st Cal. V. Inf.	15	Minnesota	50	30 00	Loss of right leg	Dec. 11, 1922
Young, Henry F.	Corporal	H, 1st Cal. V. Inf.	17	California	51		Wood alcohol poisoning	Sept. 27, 1920
Young, James B.	Private	L, 3d U. S. Art.	36	Virginia	43	12 00	General debility	Feb. 13, 1914
Younger, Elton R.	Q. M. Sergeant	L, 36th U. S. V. Inf. etc.	19	California	52		Chronic dysentery	Aug. 24, 1908
Zeller, William	Corporal	H, 1st Mont. V. Inf. etc.	31	Germany	51	18 00	Malaria	Dec. 2, 1918
Zerby, Jacob	Private	D, 46th Ill. Inf.	24	Illinois	47	50 00	Rheumatism	July 14, 1896
Zipfel, Joseph R.	Water Tender	U. S. Navy	30	Ohio	57	6 00	Age	Aug. 17, 1912

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VETERANS' HOME OF CALIFORNIA

ANNUAL REPORT

OF

Board of Directors and Officers

FISCAL YEAR ENDED JUNE 30, 1924

LOCATION OF HOME:

VETERANS' HOME POSTOFFICE, NAPA COUNTY, CALIFORNIA
RAILROAD STATION, YOUNTVILLE

CALIFORNIA STATE PRINTING OFFICE
FRANK J. SMITH, Superintendent
SACRAMENTO, 1924

34430

BOARD OF DIRECTORS AND OFFICERS, JUNE 30, 1924.

SAMUEL W. BACKUS ..... San Francisco
President and ex officio member of all committees.

HUGH M. BURKE, Vice President ..... San Francisco

B. A. FORSTERER ..... Oakland

E. L. HAWK ..... Sacramento

E. B. HINMAN ..... Redwood City

W. D. WAGNER ..... Merced

OFFICIAL AND MEDICAL STAFF, RESIDENT AT VETERANS' HOME.

COLONEL RUSSELL C. MARTIN ..... Commandant

LIEUT. COLONEL C. DE COLMESNIL ..... Secretary-Treasurer

MAJOR JOSEPH J. FRANCE ..... Chief Surgeon

CAPTAIN JULES P. EDMUNDS ..... Quartermaster-Commissary

CAPTAIN E. C. BORMAN ..... Chief Engineer

CAPTAIN W. O. MOORE ..... Assistant Surgeon

CAPTAIN S. M. MONTGOMERY ..... Adjutant

STANDING COMMITTEES.

Auditing Committee,
DIRECTOR HINMAN.

Buildings and Grounds Committee,
DIRECTOR WAGNER.

Hospital Committee,
DIRECTOR FORSTERER.

Library and Amusement Committee,
DIRECTOR BURKE.

Law Committee,

Supplies Committee,
DIRECTOR HAWK.

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LETTER OF TRANSMITTAL.

Veterans' Home, California,
September 12, 1924.

To the Honorable Friend Wm. Richardson,
Governor of California,
Sacramento, California.

Sir: I have the honor to address to you this my twenty-third annual report as president of the Board of Directors of the Veterans' Home of California, covering the seventy-fifth fiscal year.

I submit to you herewith reports of the commandant, secretary-treasurer, chief surgeon, quartermaster-commissary, chief engineer and adjutant.

In December, 1923, the Home sustained a severe loss in the death of Colonel John C. Currier, who passed away while on a visit with his daughter in Massachusetts. Colonel Currier had been a director for many years and his services were of great value to the Home. His passing is deeply regretted by his associates on the Board, and by the officers, members and employees of the Home.

Mr. W. D. Wagner, State Director of Institutions, was appointed by the Governor to fill the vacancy occasioned by Colonel Currier's death. Mr. Wagner is eminently fitted to fill this office, both on account of his experience and because he is in close touch with state affairs and institutional work.

Mr. Harry E. Speas resigned from the directorate of the Home in September, 1923. Mr. Speas' services were valuable to the Home and his resignation was regretted by all.

The appropriations allowed us by the last legislature together with our government aid have been ample to provide for the veterans in the Home. It has been our effort to improve the food and to have as much variety as possible. We feel we have accomplished much in this line, but there is still a great deal to be desired. Good clothing is provided and issued as needed. Our allowance in the past, however, has not been sufficient for the clothing needed, and we are asking for an increase for the next biennium.

The sleeping quarters are not what we would like to have for the veterans. The buildings are very old and mostly in a delapidated condition. We are having a plot plan made of the grounds and it is our suggestion that a new building program be inaugurated and the oldest buildings be, in time, torn down. Our idea would be to ask the legislature for an appropriation for at least two buildings for each biennium until the building program is completed.

We have recently rehabilitated the library, adding new linoleum, chairs, tables and steel book cases. The veterans enjoy the library, spending many comfortable hours there, reading the numerous papers, periodicals and some five thousand books furnished for them.

The library is entirely furnished and run through the post fund, as are also the entertainments, picture shows, etc. Extras for the tables are also purchased from the post fund. This fund is entirely separate from the maintenance and support fund and is derived mostly from estates of deceased members which have remained unclaimed in the posthumous fund for five years, in accordance with the United States government regulations and the state laws. There is also some revenue from post store profits which goes to the post fund.

The special appropriations for permanent improvements as allowed by the last legislature have been employed for the purposes appropriated, with the exception of some of the work not yet completed.

The wheel chairs for the hospital patients have been purchased and we feel gratified to have been able to make this much needed improvement in the hospital.

The purchase of the Ford fire truck has been made and we feel this was a very wise provision.

The five thousand dollars allowed for painting buildings not being sufficient, an additional five thousand has been used from the unbudgeted reserve to complete the work. The painting is now about completed and the buildings present a neat, pleasing appearance.

In conclusion, I desire to express the thanks of the president and Board of Directors to the Governor, the state legislature, the State Board of Control, and all other state departments with which we have come in contact, for their uniform courtesy at all times and their assistance in administering the affairs of the Veterans' Home of California to the end that everything possible may be done for the veterans who have given to the country the best that was in their power to give.

Respectfully submitted.

SAMUEL W. BACKUS,
President.

REPORT OF COMMANDANT.

From: Russell C. Martin, Colonel-Commandant.

To: President and Members of the Board of Directors.

Subject: Report for Fiscal Year ended June 30, 1924.

As commandant of the Veterans' Home of California, I have the honor to submit the reports of the secretary-treasurer, chief surgeon, quartermaster-commissary, chief engineer and adjutant for the fiscal year ended June 30, 1924. These officers in their reports cover the work of the different departments of the Home for the year.

This being my third year in command, I wish to report the continuation of improvements. In my report of last year mention was made of the appropriation for two miles of additional six-inch iron pipe for our main line water supply. This was received and installed. With the dry summer just passing, if this improvement had not been made we would have been very short of water. The former wooden pipe would have been inadequate. I would recommend that we estimate to complete the whole line with iron pipe. I would also recommend that a survey of Rector Canyon, where the dam is located, be made to determine the under flow or seepage under the dam which is wasted.

For fire protection there has been installed a fire truck with 800 feet of hose, chemical tank and hose with all accessories, which makes an up-to-date fire protection. All fire hose has been tested and unsafe hose discarded. A fire alarm system has been purchased and is being installed, which will complete the recommendations of the state fire marshal. One of our worries is fire, as all our buildings are of wood construction and a dangerous risk.

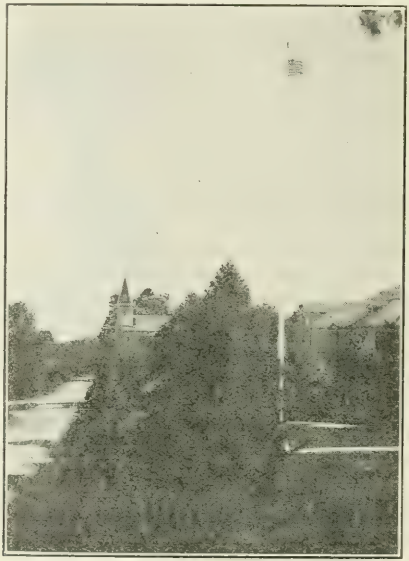
The feeding of the members has required many hours of study to give proper food with the appropriation allowed for conducting the Home. The subsistence end of the problem is what leads to the members being contented. We have a great variety of people of all ages and conditions which taxes the ability of the officers of the Home to prepare a menu which is pleasing to all. Our average membership has slightly increased over 1923 and has every prospect of materially increasing in the future. The Home is admitting a few World War veterans and is working in harmony with the United States Veterans' Bureau.

The care of all veterans becomes a more vital question every year. I would recommend that our budget for the next biennium include a complete survey of the plot plan, which is nearly completed, to locate new buildings. Then ask for appropriations to build at least one building each two years, which in ten years would complete a proper Home. In doing this it would not be a great burden for any one year, but be divided so as to not create any hardship on the taxpayers.

There has been a fine cooperation by the officers of the different departments which has resulted not only in economy but pleasant working conditions. The accounting department conducted by the secretary-treasurer has been a model of efficiency and unfailing courtesy,

not only with the state officials but our members, who in their failing health are very critical and find fault at trifles. The secretary-treasurer is guardian for many of our incompetent members who have no friends, or if they have are too far away to take the guardianship. These duties make the office one of great responsibility as well as added work.

The chief surgeon has conducted the hospital in an able manner and has given those under his care excellent service. The hospital becomes a partial byword among our members for the reason they all think if they go there they are nearing the end. For this reason they do not like to accept care at the proper time, which would prolong their lives and perhaps return them to quarters for a long time, but remain in quarters too long refusing to accept the recommendations of the chief



Administration Building and Company A Barracks.

surgeon or commandant. This condition and feeling has been overcome to a great extent by our chief surgeon and a much better thought exists in this regard throughout the Home.

The adjutant's office has kept the records of the Home in fine condition and has completed changes for the betterment of the service. We made a requisition for headstones in August, 1922, which have not yet been delivered and we are now making another one to complete the death list to June 30, 1924.

The quartermaster-commissary's office has been efficiently conducted. His office covers a variety of duties which requires tact and ability as

well as experience. Our quartermaster-commissary has all these qualities and is doing wonderful work which the Home and its officers appreciate.

The chief engineer has one of the principal parts in the work of the Home. The electrical, plumbing, steam heat, etc., being under his supervision. There have been many repairs to the buildings which have been done economically as well as quickly, keeping all work up to date. The work of installing the new iron water pipe was done under his supervision.

The outsides of all the buildings have been painted which adds very much to the appearance of the Home and its grounds. The painting and cleaning of the buildings creates an interest in the members who become more contented as they see an interest in their care and welfare. This work was supervised by the chief engineer.

During the year many entertainments have been given for the members and employees. For several years there have been given three picture shows a week at Lincoln theater. A nominal charge is made for those who get pensions or employees who are working but any member without funds has a pass. All national and state holidays have been observed. There are special services on Memorial Day. At this service veterans of all wars participate. For several years these services have been held on the lawn at the flag staff as a majority of our members are not able to walk to the cemetery. The United Spanish War Veterans from about northern California held services at the Home in honor of Manila Day.

The Home band has attended all funeral services and has given daily concerts at the main and hospital band stands. Every member buried in the home cemetery is given a soldier's honors.

Our membership is higher this year than last but the average for the past five years is about the same. The Civil War veterans decreasing and the Spanish War veterans increasing. During the summer months some of the members visit among their friends which reduces the average present in those months. Every year makes a change in the mental as well as the physical conditions of our members. Though our death list has been much less during the past two years than years before with same number present, our great obstacle to the improvement of our Home and its members is the "bootlegger," who is not only present on the grounds but is always in evidence whenever our members go off the premises. The sheriff of the county has raided the different places about the valley but the restraint is only temporary. The laws of our state do not cover one of our critical situations which causes the officers of the Home many hours of worry. When our members get intoxicated or are addicts of narcotics we have no authority to control them and give them the care the Home is intended to give. Comparatively few are addicted to these habits but those are the ones who are troublesome. We get severely criticised by the outsiders who think we should care for these members and not let them drift about the community. The Home or its officers are powerless to do this and have to sit idle and allow conditions to exist which they can not correct. If we discharge one of these members he only goes out as a public charge to be cared for by the county or sent back to the Home again. I think this question should be given careful thought by your Board.

It is hoped the Home affairs may be conducted by the veterans who instituted the Home and their successors as they have an interest in the veterans. We employ veterans whenever they are available.

The library has recently been overhauled and improvements of additional metal book racks, tables, chairs, lights, as well as many books added. This makes the library one of the finest in this part of the state. Many daily papers, magazines and reading matter other than books are furnished. We are very proud of our library. Many improvements have been made in the amusement hall and others are being arranged for the coming year. The old billiard tables were exchanged for new ones including racks, cues, balls, etc.

My association and work with the Board of Directors, State Board of Control, State Engineering Department, State Purchasing Department, as well as all state officials has been very pleasant. To the officers of the Home personally, I have only words of thanks for their effort in assisting in the cooperation and conduct of the Veterans' Home of California. We hope the coming year will find us equally as united in the service for veterans of all wars as well as the state.

Respectfully submitted.

R. C. MARTIN,
Colonel-Commandant.

REPORT OF SECRETARY-TREASURER.

VETERANS' HOME, August 21, 1924.

To the President and Board of Directors,
Veterans' Home of California,

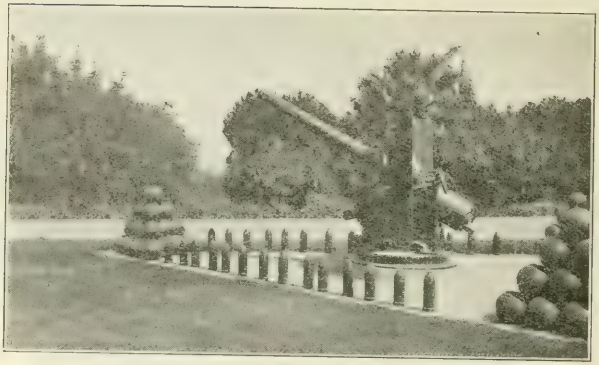
(Through COLONEL RUSSELL C. MARTIN, *Commandant.*)

GENTLEMEN: I have the honor to submit herewith statement of receipts and disbursements and transactions in this department of the Veterans' Home of California for the seventy-fifth fiscal year, ended June 30, 1924.

Trial balance, control ledger	Schedule 1
Statement of income	Schedule 2
Statement of expenditures, state	Schedule 3
Statement of expenditures, post fund	Schedule 4
Statement of cash receipts and disbursements	Schedule 5

Respectfully submitted.

C. DE COLMESNIL,
Secretary-Treasurer.



Scene near main road leading to Home Grounds.

A group of Boy Scout visitors.

SCHEDULE 1.

Trial Balance—Control Ledger Accounts as of June 30, 1924.

	Debit		Credit	
Funding group:				
Available appropriated funds	$274,979	97		
Support, appropriation 75th and 76th fiscal years			$123,133	00
Salaries and wages, appropriation 75th and 76th fiscal years			128,412	00
Improvements and equipment, Chap. 121-23			17,090	14
Printing, appropriation 71st and 72d fiscal years			123	66
Printing, appropriation 73d and 74th fiscal years			330	47
Installation of boilers, Chap. 483-17			10	37
Repairs, improvements and equipment, Chap. 442-19			244	55
Repairs, improvements and equipment, Chap. 391-21			3,477	94
Construction and equipment, power house			82	04
Emergency, Resolution No. 68, 72d fiscal year			1,517	76
Emergency, Resolution No. 3, 73d fiscal year			16	06
Plot plan			541	98
Totals	$274,979	97	$274,979	97
Proprietary group:				
Support and subsistence	$105,866	40		
Care and welfare	45,338	74		
Farming	25,018	87		
General	22,714	31		
Maintenance and operation of plant	42,640	33		
Additions and betterments	60,549	81		
Stores	12,293	76		
Veterans' Home maintenance fund 74th fiscal year	36,378	97		
Support fund, 75th fiscal year	65,204	64		
Salaries, 75th fiscal year	1,887	50		
United States aid receivable	16,810	00		
Warrants receivable	15,749	18		
Accounts receivable	37	25		
Revolving fund	1,000	00		
Properties	509,483	21		
Cash sales of purchased goods	24	40		
Stores pending			$74	23
Claims payable			15,749	18
Income, current fiscal year			377,940	79
Departmental income			1,551	91
Excess income prior fiscal year			55,872	74
Accountability for property			509,483	21
Liability for canceled checks			325	31
Totals	$960,997	37	$960,997	37
Post fund group:				
Support and subsistence	$3,233	94		
Care and welfare	14,943	61		
General	3,179	79		
Post store inventory	1,980	71		
Bank, commercial	3,333	95		
Post store purchases	14,360	64		
Revolving funds	1,150	00		
Properties	17,835	89		
Savings account	19,886	06		
Claims payable			$2,300	38
Departmental income			5,287	86
Interest earned			3,180	71
Post store sales			19,617	09
Capital			47,016	66
Income from posthumous account			2,490	89
Liability for canceled checks			11	00
Totals	$79,904	59	$79,904	59
Members' special deposit fund:				
Bank, commercial	$7,990	32		
Bank, savings	20,729	80		
Revolving fund	3,000	00		
Members' credit			$31,720	12
Totals	$31,720	12	$31,720	12

SCHEDULE 2.

Statement of Income for Period July 1, 1923, to June 30, 1924, Seventy-fifth Fiscal Year.

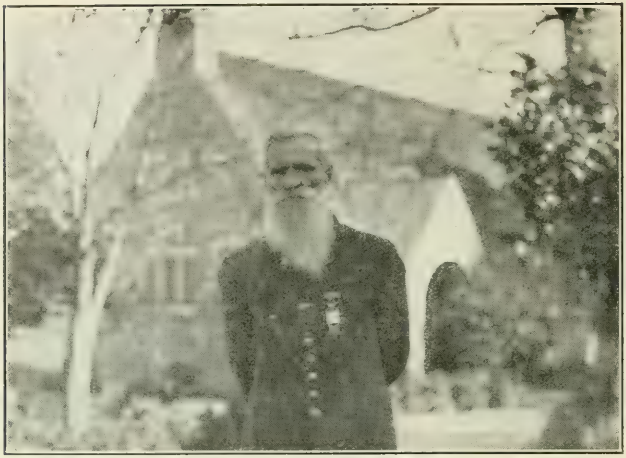
Income		*Total*
Appropriated—		
Maintenance appropriations 74th fiscal year	$19,155 90	
Salaries appropriations 75th fiscal year	115,611 12	
Support fund 75th fiscal year	104,066 56	
Chapter 391, Statutes of 1921	1,280 15	
Appropriation for fire truck, 1923	868 04	
Chapter 391, statutes of 1923	553 50	
Revolving fund, 75th fiscal year	1,000 00	
		$242,535 27
United States Aid—		
For quarter ended June 30, 1923	$15,780 00	
For quarter ended September 30, 1923	15,870 00	
For quarter ended December 31, 1923	17,220 00	
For quarter ended March 31, 1924	18,120 00	
		$66,990 00
Departmental—		
Checks uncal'ed for canceled	$135 53	
Clothing refunded	97 58	
Refundments, rebates, etc.	140 82	
Meals, guest house	100 00	
Surgical dressings and prescriptions	6 75	
Sale of purchased goods 74th fiscal year	24 40	
Sale of purchased goods 75th fiscal year	183 46	
Sale of milk	85 15	
Sale of prunes	495 50	
Sale of hides	42 67	
Sale of calves and cows	250 00	
Sale of rags, bones, junk, etc.	329 70	
		$1,891 56
Post Fund—		
Post store gross sales	$19,617 09	
Moving pictures, gross receipts	5,092 61	
Interest on savings and commercial accounts	3,180 71	
Receipts from transportation advances	10 55	
Advance to revolving fund returned	150 00	
Miscellaneous receipts	34 70	
Income from posthumous account	2,490 89	
		$30,576 55

SCHEDULE 3.

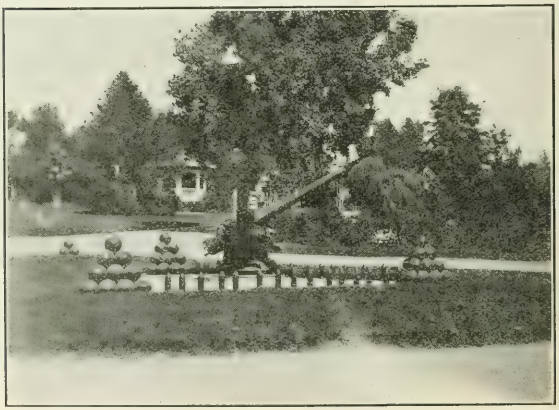
Statement of Expenditures for Period July 1, 1923, to June 30, 1924—

Seventy-fifth Fiscal Year.

	Materials and Supplies	Salaries and Wages	Service and Expense	Property and Equipment	Total
Support and Subsistence:					
Feeding	$47,655 46	$30,836 20	$37 60	$1,035 10	$79,564 36
Clothing	13,757 19	840 00	122 90		14,720 09
Housekeeping	1,304 27	2,382 76	2 50	2,433 71	6,123 24
Laundry	991 92	3,641 75	22 32	802 72	5,458 71
Totals	$63,708 84	$37,700 71	$185 32	$4,271 53	$105,866 40
Care and Welfare:					
Attendance		$8,283 35			$8,283 35
Medical care	$1,424 43	29,764 64	$3 00	$244 22	31,436 29
Personal care	405 71	298 55			704 26
Education and religion		72 00			72 00
Amusement and recreation	19 44	3,807 84	32 75		3,860 03
Burials	535 31	447 50			982 81
Totals	$2,384 89	$42,673 88	$35 75	$244 22	$45,338 74
Maintenance and Operation of Plant:					
Maintenance of buildings	$1,786 78	$6,312 23		$29 79	$8,128 80
Maintenance of grounds	122 89	4,415 97	$36 25	49 73	4,624 84
Light, heat and power	16,804 69	6,569 88	4,305 74	2,080 38	29,760 69
Water		125 00	1 00		126 00
Totals	$18,714 36	$17,423 08	$4,342 99	$2,159 90	$42,640 33
Farming:					
Dairy	$1,618 85	$1,968 64	$113 17	$48 00	$3,748 66
Farm and orchard	572 08	3,270 84	58 35	43 20	3,944 47
Hog ranch	2,318 68	952 50	3 00	35	3,274 53
Poultry ranch	5,750 84	1,751 94		494 60	7,997 38
Vegetable garden	3 25	1,800 00			1,803 25
Stable and tractor	286 08	3,650 00	310 50	4 00	4,250 58
Totals	$10,549 78	$13,393 92	$485 02	$590 15	$25,018 87
General:					
Board of directors			$231 70		$231 70
General offices	$1,330 73	$12,350 30	3 30		13,684 33
Postage			287 00		287 00
Telephone and telegraph		964 51	729 79		1,694 30
Automobile	724 65	2,050 46	105 83	$149 82	3,030 76
Freight, cartage and express			3,519 63		3,519 63
Stores condemned	3 52				3 52
Stores adjustments Dr.	170 45				170 45
Miscellaneous			269 18	164 34	433 52
Totals	$1,888 45	$15,365 27	$5,146 43	$314 16	$22,714 31
Total general expenditures	$97,246 32	$126,556 86	$10,195 51	$7,579 96	$241,578 65
Additions and Betterments:					
Structures				$60,549 81	$60,549 81
Grand total expenditures	$97,246 32	$126,556 86	$10,195 51	$68,129 77	$302,128 46



Chapel and Chaplain Jacob Slease.



The Band Stand.

SCHEDULE 4.

Statement of Expenditures, Post Fund, for the Period July 1, 1923, to June 30, 1924—Seventy-fifth Fiscal Year.

	Materials and Supplies	Salaries and Wages	Service and Expense	Property and Equipment	Total
Support and Subsistence:					
Feeding	$3,212 21				$3,212 21
Housekeeping				$20 20	20 20
Laundry	1 53				1 53
Totals	$3,213 74			$20 20	$3,233 94
Care and Welfare—					
Attendance		$673 00			$673 00
Medical care	$0 74				74
Chapel		585 00	$21 00	$2 00	608 00
Library	108 49	1,407 70	661 82	382 69	2,560 70
Entertainment	60 30		499 55	410 34	970 19
Picture shows	51 32	1,908 76	4,592 84	184 43	6,737 35
Billiards and bowling	43 80			48 15	91 95
Band	65 25	3,118 67		40	3,184 32
Burials			115 00	2 36	117 36
Totals	$329 90	$7,693 13	$5,890 21	$1,030 37	$14,943 61
General:					
Freight, cartage, express			$406 57		$406 57
Advances to veterans			17 55		17 55
Post store	$13 70	$1,866 44		$28 91	1,909 05
Post store purchases	14,360 64				14,360 64
Surety bond			223 15		223 15
Miscellaneous			623 47		623 47
Totals	$14,374 34	$1,866 44	$1,270 74	$28 91	$17,540 43
Total post fund expenditures	$17,917 98	$9,559 57	$7,160 95	$1,079 48	$35,717 98

SCHEDULE 5.

Statement of Bank Deposits and Withdrawals for the Period July 1, 1923, to June 30, 1924.

	Balance July 1, 1923	Deposits	Withdrawals	Balance June 30, 1924
General Accounts:				
Bank, commercial		$241,535 27	$241,535 27	
Bank, state		1,891 56	1,891 56	
Bank, revolving fund	$1,000 00			$1,000 00
Post Fund Accounts:				
Bank, commercial	6,653 17	35,516 19	38,835 41	3,333 95
Bank, savings	24,850 70		4,964 64	19,886 06
Bank, revolving fund	1,150 00			1,150 00
Trust, Members' Special Deposits:				
Bank, commercial	6,983 28	37,954 56	36,947 52	7,990 32
Bank, savings	20,729 80			20,729 80
Revolving fund	3,000 00			3,000 00

A group of hospital patients.

Companies E and G barracks.

REPORT OF HOSPITAL.

From: Major J. J. France, Surgeon, Veterans' Home, California.

To: Colonel R. C. Martin, Commandant, Veterans' Home, California.

Subject: Annual Report of Hospital for the fiscal year ending June 30, 1924.

The following report is submitted for your approval:

Number of patients in hospital July 1, 1923	143
Number of patients treated during fiscal year 1924	553
Number of patients discharged from hospital during fiscal year 1924	325
Number of patients remaining in hospital at close of fiscal year 1924	142
Number of patients treated at "sick call" (out-patients)	13,168
Number of deaths	69
Average age at death of Civil War veterans	81 years
Average age at death of Spanish-American War veterans	57 years

Reviewing the progress made the last year in the hospital there are several prominent features to be considered. The most conspicuous being the death rate, which was again decreased this year, it being twenty less than the year before, while the number of patients actually treated in the hospital and those attending sick call (or out-patients), have increased. Taking up the separate months we find, that not since 1905 has the record been so low as June, 1924. This is especially gratifying in the face of advancing years and large number of incurable cases that have to be cared for.

Another point worthy of mention is, that for the first time in its history the hospital has been recognized by the College of American Surgeons.

The good results being obtained are due to the ever increasing personal interest taken by the ex-service men and other employees. It is our policy to employ at all times, when possible, ex-service men only. Many of these are doing valuable work, even though their former occupation was different.

The quality and quantity of food on the whole has been up to standard.

The cost of drugs is being kept at a minimum because of the personal supervision by the different department heads, especially in the Dispensary, where the quantity of each prescription has been cut to one-third and repeated as necessary.

I want to thank the Board of Directors, especially the hospital committee, for their loyal support which makes it possible to obtain good results.

J. J. France.

QUARTERMASTER-COMMISSARY REPORT.

General Samuel W. Backus,
President, Board of Directors.

(Through Col. R. C. Martin, *Commandant.*)

Sir: I have the honor to submit herewith a report of the quartermaster-commissary for the fiscal year ended June 30, 1924.

The quartermaster's department embraces the commissary, main kitchen, bakery, farm, chicken and hog ranches, dairy, transportation, laundry, clothing, and every feature pertaining thereto.

SUPPLIES.

The contractors furnishing supplies to this institution have all conformed closely to the state specifications with the exception of a very few who attempted to send inferior goods, which goods were at once refused and returned to them at their expense.

Our supplies are purchased by the State Purchasing Department at Sacramento, California, and, after being received at the institution, samples are forwarded to the State Board of Health at Berkeley for analysis, and if not found up to the standard are rejected.

EMPLOYEES.

The departments employ regularly 41 male and 20 female help (40 civilians and 21 members of the Home), total 61. During the season of production a few more men are employed on the farm. The proportion of members to civilian help varies slightly but the general average is about the same. Every effort is made to obtain and keep good employees. Where the service rendered is exceptionally good, and beyond what the employee is supposed to render increase of pay is recommended after six months of employment.

A set of quarters for married employees (6), has been constructed and furnished. They are now occupied, and are very satisfactory.

Employees of the quartermaster's department (farm and transportation) are too often called upon to perform duties other than the regular assignment. While the cooperation is given most heartily, it nevertheless works a detriment to the desired and expected efficiency of the department.

WASTE.

All garbage from the kitchen, dining rooms, and restaurant is sent to the hog ranch, materially reducing the cost of feeding.

Old sacks, scrap iron, rubber or junk of any nature are sold to the junk dealers for the best prices obtainable.

KITCHEN.

The food is well cooked and of a very good variety. Our menu shows a very nicely balanced ration for both the older men and the working men, the tables are supplied daily with fresh vegetables and fresh fruit in season.

The work in the kitchen has been very closely supervised to prevent waste.

FRUITS.

The orchard has furnished an abundance of fresh fruit during the season; also, a splendid yield of prunes, enough being stored to furnish the institution with all prunes needed until the next crop is available, and a large surplus will be sold through the State Purchasing Agent to other state institutions.

FARM.

The feed produced during the year has been especially good, both as to weight and quality.

The soil has been enriched with manure and lime, this being well worked into the ground, and by intensive cultivation the yield has been above the average.

DAIRY.

The herd is in splendid condition. The milk produced during the past year has been of exceptional quality, admitting a good test at all times. Served with butter-fat and cream intact. This insures a perfect table milk.

CHICKEN RANCH.

This department is doing very good work and getting splendid results from the 2519 white leghorns that supply the Home with the necessary eggs and a great many fricassee dinners for the main mess and the Hospital. (2763 chicks on hand.)

The improvements to the fences and buildings that we hope to make this fall and spring will give a great capacity, and the birds will do even better than in the past, by having more and roomier quarters.

During the year 29,736 dozen eggs are consumed. At present writing we have on hand: Hens, 1440; pullets, 1079; chicks, 2763; total 5282.

During the past six months 15,660 dozen eggs were produced, a very creditable showing. Every effort is being made to produce the required amount of eggs needed for consumption as noted (29,736 dozen). A rabbitry has been established; also an initial start in raising turkeys.

HOG RANCH.

This drove has supplied the Home with all of the fresh and salt pork and a great deal of the hams and bacon which is cured and smoked by the butcher department.

VEGETABLE GARDEN.

The Home has been supplied by an abundance of first class vegetables of all varieties.

CLOTHING.

A uniform of exceptional good material (dark blue $\frac{3}{4}$ standard cloth in coat, and sky blue kersey in trousers) has been furnished the members of the Home.

Improvement has been made in the matter of dress (uniform) for the dead. A very fine burial robe, made of blue kersey, uniform pattern, with white collar, is now being furnished.

THE LAUNDRY.

A dry cleaning plant should be installed in connection with laundry, to be used exclusively for uniforms of the men; while the present method of wet scrubbing and dry pressing of uniforms is employed, it could be greatly improved upon through the use of dry cleaning and pressing, conserving the life of the cloth materially. Request for special appropriation to meet the cost of installing a dry cleaning plant is recommended.

TRANSPORTATION.

The rolling stock is in good condition, except the Federal truck, which is in fair condition, but will have to be replaced within the next year. Efforts are now in progress to secure a government truck, and if successful will provide the department with an excellent truck, without the necessity of purchasing a high priced truck. Present truck is now in service for about ten years.

POST STORE.

The post store, under the supervision of the quartermaster, is a profitable adjunct to the Home, besides being a great convenience to members, officers and employees. A careful inventory of stock is taken every month, a complete report of expenditures and receipts made and the profit ascertained. For the twelve months ended June 30, 1924, the cash profit was $3,362.97.

For kindly consideration and cooperation the thanks of this department are due the Board of Directors, the commandant and other officers, and to a corps of earnest, intelligent employees.

Respectfully submitted.

J. P. EDMUNDS.

VETERANS' HOME OF CALIFORNIA.

Bill of Fare for the Main Dining Room for the Week.

SUNDAY.

BREAKFAST: Soft Boiled Eggs, American Fried Potatoes, Graham Muffins, Apple Sauce, Bread, Butter, Coffee.

DINNER: Roast Leg of Veal and Brown Gravy, Mashed Potatoes, Creamed Peas, Chocolate Pudding, Bread, Coffee, Milk.

SUPPER: Cold Assorted Meats, Potato Salad, Mayonnaise Dressing, Corn Flakes and Milk, Peach Pie, Bread, Butter, Coffee, Tea.

MONDAY.

BREAKFAST: Roast Beef Hash, Cottage Fried Potatoes, Corn Bread, Stewed Prunes, Bread, Butter, Coffee.

DINNER: Creamed Tomato Soup, Soda Crackers, Roast Sirloin of Beef and Brown Gravy, Steamed Potatoes, Buttered Beets, Cottage Cheese, Bread, Coffee.

SUPPER: Mutton Chops and Country Gravy, French Fried Potatoes, Creamed Rice and Milk, Raisin Buns, Stewed Prunes, Bread, Butter, Coffee, Tea.

TUESDAY.

BREAKFAST: Meat Balls and Gravy, American Fried Potatoes, Hot Biscuits, Apricot Sauce, Bread, Butter, Coffee.

DINNER: Boston Baked Pork and Beans, Creamed Potatoes, Fried Parsnips, Bread Pudding and Corn Starch Sauce, Bread, Coffee, Milk.

SUPPER: Beef Stew Southern Style, Baked Potatoes, Baked Beans, Coffee Cake, Apricot Sauce, Bread, Butter, Coffee, Tea, Milk.

WEDNESDAY.

BREAKFAST: Scrambled Eggs and Cottage Fried Potatoes, Milk Toast, Stewed Prunes, Bread, Butter, Coffee.

DINNER: Pearl Barley Soup, Soda Crackers, Boiled Beef, Spanish Sauce, Steamed Potatoes, Creamed Carrots, Bread, Coffee.

SUPPER: Club Steak and Country Gravy, Lyonnaise Potatoes, Oatmeal Mush and Milk, Ginger Bread, Stewed Prunes, Bread, Butter, Coffee, Tea.

THURSDAY.

BREAKFAST: Club Sausage, American Fried Potatoes, Corn Muffins, Peach Sauce, Bread, Butter, Coffee.

DINNER: Roast Pork and Sage Dressing, Creamed Potatoes, String Beans, Pickles, Bread, Coffee.

SUPPER: Veal Fricassee, Escalloped Potatoes, Macaroni and Cheese, Coffee Buns, Peach Sauce, Bread, Butter, Coffee, Tea.

FRIDAY.

BREAKFAST: Soft Boiled Eggs, Cottage Fried Potatoes, Hot Biscuits, Stewed Prunes, Bread, Butter, Coffee.

DINNER: Clam Chowder Soup, Soda Crackers, Frankfurters and Cabbage, Steamed Potatoes, Cottage Cheese, Bread, Coffee.

SUPPER: Fried Liver and Onions, Baked Potatoes, Boiled Lima Beans and Pork, Cinnamon Rolls, Stewed Prunes, Bread, Butter, Coffee, Tea.

SATURDAY.

BREAKFAST: Breakfast Bacon, American Fried Potatoes, Hot Biscuits, Apple Sauce, Bread, Butter, Coffee.

DINNER: Cream of Tomato Soup, Soda Crackers, Boiled Pork Spare Ribs, Steamed Potatoes, Creamed Turnips, Lemon Meringue Pudding, Bread, Coffee.

SUPPER: Pork Chops and Cream Gravy, French Fried Potatoes, Baked Spaghetti and Tomatoes, Race Track Rolls, Apple Sauce, Bread, Butter, Coffee, Tea.

Approved:

R. C. MARTIN,
Colonel-Commandant.

ANNUAL REPORT OF ENGINEER'S DEPARTMENT FOR 1923-24.

General Samuel W. Backus, *President,*
and the Board of Directors,
Veterans' Home of California.

(Through Colonel Russell C. Martin, *Commandant.*)

Gentlemen: I have the honor to present herewith an annual report of the work performed by the various departments under my supervision as well as the work of the State Department of Public Works, Division of Architecture, at this Home, for the fiscal year ended June 30, 1924.

OFFICES AND SHOPS.

Laundry machinery in old laundry has been removed and set up in new laundry and all equipment is now motor driven; all steam and hot water pipes in laundry have been covered with insulation. Frames for bread pans have been made for bakery; new night latch placed in door in new butcher shop; work bench made for carpenter shop; mattress horses for mattress shop; potato masher for quartermaster's department; screened porch at treasurer's office has been overhauled and repaired and new screen cloth put in where needed; platform and hose rack made for laundry; step ladder for dairy barn; six meat boxes for butcher shop; three coffee boxes for commissary department; new flooring laid in barber shop at Company "A" and screen door and window shades placed in same; window shades installed and two laundry trucks made for laundry; tool cabinet made for carpenter shop; window shades installed in telephone office; bulletin boards made for administration building and electric depot; transom at treasurer's office has been frosted; interior of barber shop at Company "A" has been painted; twenty-five flower stakes painted for florist; food carrying tray made for firemen in power house; strainer made for the large milk tank at dairy barn; oil drip can made for ice plant; new awnings erected on west windows of new laundry; twenty feet of galvanized iron gutter made for commissary department; scrubbing table in tailor shop has been covered with galvanized iron; new smoke stack made for the paint shop; two milk buckets for dairy barn; two 3-gallon buckets for bakery; roof safe and smoke stack made and installed at electric depot; three oil drip pans made for use in power house; oven canopy made for bakery; two galvanized iron buckets for engineer's department; ventilator for dairy barn; ventilator and extension made for milk pasteurizing room; two five-gallon square milk cans made for dairy; five-gallon gasoline can and water cooler made for tin shop; soda scoop for laundry; galvanized iron seed cabinet for vegetable garden; funnels made for laundry, tin shop and bakery; ventilator and extension made and installed at new butcher shop; fender and hose basket for chemical hose made for new fire truck; tin record filing case made for bakery; 450-gallon galvanized iron tank made for Home water wagon; thirty-six soup tureens, twenty-four galvanized iron buckets,

twenty-four garbage cans, two 1-gallon milk cans, four dippers, one bread box and three soap and bottle holders made for Quartermaster's department.

BARRACKS AND QUARTERS.

New radiator installed in bathroom at Company "E" barracks; new three-compartment galvanized iron wash tray installed at hospital waitresses quarters replacing old one that was worn out; new smoke stack placed in Home restaurant; Crane trap placed in steam line at Lincoln theater; new diaphragm placed in steam regulator at post store; two-compartment galvanized iron wash tray installed at new quarters for married employees at Company "C;" new slop sink installed at billiard hall; new shelf placed in library; stand for show case made for post store; book case made for library; new screens placed in Lincoln theater; new window shades installed in billiard hall; new inside lock

Main Dining Room.

set placed in door at Company "E;" grating made for bathroom Company "B;" bolts placed on toilet doors Company "E;" platform made for toilet at Company "G;" new shades and window and door screens placed in married employee's quarters; frame made for skylight at post store; new window shade and screen door placed in Company "G;" slop sink made for billiard hall; skylight at post store has been reputtied; flag pole painted for Company "C;" bathrooms at Companies "E" and "G" barracks have been painted and enameled; zinc drip pans made for post store; six roof safes and two ventilators made for married employee's quarters; two flush tanks relined for Company "G."

RESIDENCES.

New bowl installed in toilet at Home restaurant; new pipeless heating furnace installed at engineer's residence; new compression bath cocks placed in bath tub at administration building; drain board made for treasurer's residence; stand made for engineer's residence; clothes closet and window sash made for quartermaster's residence; coal box,

drain board and door made and screens placed in skylight at guest house; step ladder made for treasurer's residence; bed frame made for treasurer's clerk's cottage; screen door made and installed at adjutant's residence; two doors made for garage at baker's residence; window shades placed in new addition to chief surgeon's residence; floor, hallway, bathroom, pantry and closet painted and ten trays painted and enameled for guest house; skylight for engineer's residence; sanitary toilet bucket and three radiator drip pans made for commandant's residence; 15-gallon ham boiler made for guest house; two-gallon soup kettle, two 1-gallon milk cans, and one 3-gallon copper kettle made for quartermaster's residence; galvanized iron gutters made for new addition to chief surgeon's residence; dish pan and mould for brown bread made for guest house; double roaster made for quartermaster's residence.

MAIN DINING ROOM AND KITCHEN.

New steam roaster installed in main kitchen; two meat boards and frame for bread cutter made for main dining room; dining tables in main dining room have been painted and enameled and chairs have been cleaned and varnished where needed; dish shelf in dishwashing room relined with galvanized iron; valley gutter made for main dining room roof; iron smoke stack made and placed at main kitchen; twelve galvanized iron dish trays and safeguard for bread cutter made for main dining room; frame for coffee urn and two potato steamers made for main kitchen.

HOSPITAL.

A new electric lighting system has been installed in the hospital and is giving good satisfaction; new electric fan installed in kitchen; heavy iron top placed on kitchen range; covering has been removed from steam mains in blind ward for additional heat; hot water storage tank has been covered with asbestos insulation; hose bibb cut in to water line at blind ward; nine radiator guards made; cover for steam boiler made for kitchen; frames made and canvas fitted for awnings for new band stand and same placed in position; four heavy tin mush boilers; thirty special night buckets; two 3-gallon coffee pots, six tin dippers, twenty-four galvanized iron buckets, one vent hood, six food-carrying buckets with covers, incinerator for Ward 4, one 5-gallon syrup can and one ½-gallon pressure tank and stand made for hospital.

POWER HOUSE.

Ray automatic burners have been installed under boilers and same are working in a very satisfactory manner and are proving to be a saving in the consumption of fuel oil; a new motor driven air compressor has been installed in power house for the purpose of supplying air for automobiles; the bottom and sides of sump for return water from steam lines has been plastered with a cement plaster to make same water-tight and motor has been connected up for the purpose of pumping water from sump to tank in boiler room at Power House.

ICE PLANT.

One hundred sixty-two tons of ice were made and delivered as well as supplying sufficient refrigeration for meat rooms and milk storage room.

CARPENTER SHOP.

Forty-eight burial caskets were made and a supply of casket covers and headboards for cemetery, new work and repairs to buildings, etc., was done as needed.

PAINT SHOP.

Sixty-three headboards were painted and lettered; eighty-one lights of glass were renewed around camp; all burial caskets were stained, varnished and glazed with 10 x 24 glass; all new wooden construction was painted as made and repairs to furniture, etc., made as needed.

STATE WORK.

Chapter 391-21.

Work Order No. 108.

New feeding shed has been erected along side of hay barn in the pasture.

Work Order No. 188.

A wooden flume has been placed above dam in Rector Canyon for an additional water supply.

Work Order No. 474.

The administration and main dining room buildings have been reshingled and roofs of other buildings have been repaired where needed.

Cottage No. 5 at Company "C" has been remodeled into a five-room and bath quarters for married employees and same is now being occupied.

Work Order No. 570.

An addition has been erected on the south side of chief surgeon's residence, upper floor is being used as a sleeping porch and lower floor for cook's quarters with toilet and bath.

Chapter 121-23.

Work Order No. 490.

Excavations were made and approximately 12,000 feet of 6-inch double-dipped iron pipe was laid to replace wooden pipe in the Rector Canyon pipe line that had become old and unserviceable. This pipe, with what was previously laid, gives the Home a continuous line of 6-inch iron pipe from a point in the Home grounds at Treasurer's residence to a point about one-third mile out on back road.

Work Order No. 492.

Interior of bakery has been remodeled, ceiling placed, bread mixer moved to a new location, new flour-receiving platform erected, doorway cut for entrance for flour, cement wainscoting placed in side walls, sink placed in new location, glazed skylight placed in roof and all interior has been painted with a washable wall paint.

Roof of head farmer's cottage has been reshingled.

Steps at entrance to Company "A" barracks have been torn out and rebuilt with concrete lower steps, new stepping put in where

needed and pipe rails placed, wooden rails on porches have been removed and replaced with pipe rails and porches repaired where needed.

Old building removed from rear of guard house and remodeled and concrete floor placed in same and is now being used as a garage at treasurer's residence. Ceiling of kitchen at treasurer's residence has been painted.

Track scales installed in butcher shop.

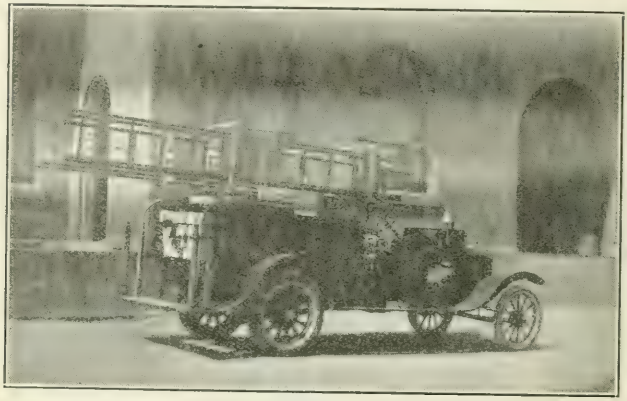
Concrete gutter placed in rear of power house and laundry.

Galvanized iron gutters have been placed at administration building.

Window at south side of main kitchen has been made to swing outward and fly screen placed over same for ventilation purposes.

Work Order No. 508.

Plastering in kitchen and on lower floors of hospital has been



Fire Truck.

repaired where same had become loose and broken; plaster on columns on lower floor has been removed and replaced with cement plaster; porch floor at old Annex building has been renewed; painting at hospital was started but owing to lack of funds this work has been suspended.

Work Order No. 539.

Roofs of administration and main dining room buildings have been given two coats of mineral paint; roofs of Companies "A," "E" and "G" barracks one coat, this work was done with a paint spraying machine. Exteriors of administration building, main dining room building, Companies "A," "E" and "G" barracks have been painted.

Respectfully submitted.

E. C. Bowman,
Chief Engineer.

REPORT OF THE ADJUTANT.

VETERANS' HOME, July 1, 1924.

To the President and Board of Directors,
Veterans' Home of California.

(Through COL. RUSSELL C. MARTIN, *Commandant.*)

Gentlemen: I have the honor to submit herewith statement showing statistics of membership of the Veterans' Home of California together with descriptive list of all members present, and absent, on June 30, 1924, for the fiscal year ended June 30, 1924.

STATISTICS.

Membership of Home June 30, 1923		801
New admissions during the year—		
Survivors of the Civil War	60	
Survivors of the Indian Wars	12	
Survivors of the Spanish-American War	149	
Survivors of the World War	14	
Survivors of the Foreign Service	6	
Survivors of the Mexican Border	2	
Total admissions	243	
By readmission	134	
Total gain	377	
Losses during the year—		
By discharge, own request	168	
By discharge, committed to insane asylum	3	
By dropped, absent without leave	16	
By dropped, not renewing furlough	22	
By death (members), in hospital 65, on leave 14	79	
By death, temporary at post (in hospital)	4	
Total loss	288	
Net gain		89
Membership of Home June 30, 1924		890
Segregation as to Wars—		
Civil War	371	
Indian Wars	53	
Spanish-American War	443	
World War	16	
Foreign Service	7	
Total	890	
Average present during the year	567	
Average present and absent during the year	852.9	
Average absent with leave during the year	281.9	
Average absent without leave during the year	3.9	
Average sick in hospital (members)	139.5	

Average age of members admitted	years	60.3
Average age of Civil War veterans	years	81.3
Average age of Indian War veterans	years	72.6
Average age of Spanish-American War veterans	years	56
Average age of World War veterans	years	39.5
Average age of Foreign Service veterans	years	57.1
Average age of all living members	years	67.2
Average age of all members dying during the year	years	72.8
Total admissions to June 30, 1924, inclusive		8554
Highest number present during the year		628
Highest nuumber present and absent during the year		901
Average temporary at post during the year		12.10

Average number sick, with leave, without leave, present, present and absent, whole number cared for, gain and loss, at Veterans' Home of California from June 30, 1890, to June 30, 1924.

During the year ending June 30	Average sick	Absent with leave	Absent without leave	Average present	Average present and absent	Whole number cared for	Gain			Loss						
							By admission	By readmission	Total	By discharge	By summary discharge	By dishonorable discharge	By dropped from roll	By death	Total
1890	25	32	2	20	236	304	136	9	145	42	-----	14	23	17	96
1891	31	49	3	233	279	361	192	17	209	59	-----	5	25	23	112
1892	122	75	7	334	416	542	308	56	364	116	-----	20	68	44	248
1893	163	104	9	411	524	591	228	83	311	123	-----	16	68	32	239
1894	44	48	11	416	475	562	291	114	405	348	-----	30	62	42	492
1895	43	34	6	442	482	516	263	203	466	277	-----	34	51	35	397
1896	48	47	8	553	588	588	275	224	499	300	-----	36	28	51	415
1897	50	40	11	600	651	651	257	198	455	229	25	11	68	42	375
1898	74	51	11	624	686	686	197	189	386	247	47	5	60	30	397
1899	103	48	13	674	735	735	206	246	452	168	17	2	105	51	373
1900	115	66	17	689	772	772	186	218	404	218	19	3	133	68	441
1901	128	70	15	703	788	788	189	225	414	153	10	4	120	74	361
1902	128	71	14	735	820	820	186	199	385	214	43	4	88	60	409
1903	116	104	12	709	825	825	193	201	394	124	59	2	45	76	306
1904	124	141	20	726	887	887	197	175	372	146	37	-----	69	75	327
1905	127	140	25	730	895	895	215	166	381	130	65	1	97	72	365
1906	143	115	11	764	895	895	180	200	380	265	76	1	82	70	494
1907	135	86	6	721	813	813	131	192	323	15	20	2	31	88	326
1908	139	85	10	761	856	856	223	214	437	120	50	3	78	94	345
1909	160	120	10	834	971	971	268	181	449	119	31	6	68	120	334
1910	159	179	13	855	1047	1049	273	164	437	131	20	2	105	86	344
1911	178	228	16	925	1169	1180	324	154	478	275	6	5	69	133	440
1912	208	159	15	982	1156	1164	292	209	501	310	3	1	93	107	514
1913	208	130	10	944	1084	1094	259	278	537	339	13	2	150	120	624
1914	195	117	11	912	1041	1054	294	299	593	321	3	4	102	139	560
1915	214	84	7	972	1063	1068	340	304	644	365	2	3	132	136	638
1916	211	83	8	936	1020	1031	228	247	475	319	-----	-----	101	183	553
1917	238	88	6	878	974	980	244	231	475	333	-----	-----	73	134	540
1918	204	82	7	777	866	871	218	222	440	421	-----	-----	78	110	610
1919	134	73	6	662	701	710	185	277	462	348	-----	-----	64	141	553
1920	117	76	4	598	678	687	152	290	442	264	-----	-----	53	94	411
1921	136	126	3	636	765	799	240	231	471	217	-----	-----	41	96	354
1922	133	196	6	617	819	834	238	182	420	260	-----	-----	41	108	409
1923	135	250	3 5	552	806	821	195	168	363	246	-----	-----	43	89	378
1924	140	282	3.9	567	853	866	243	134	377	171	-----	-----	38	79	288

Nativity—	
Native born	5,532
Foreign born	3,022

Nativity of Foreign Born.

Australia	4	Malta	1
Austria	25	Mexico	1
Azores	1	New Brunswick	2
Belgium	2	Norway	38
Bohemia	1	Nova Scotia	16
Canada	192	Poland	15
Denmark	69	Porto Rico	1
England	292	Portugal	1
Finland	2	Prussia	27
France	71	Russia	6
Germany	653	Scotland	104
Hawaii	1	South Africa	1
Holland	7	Sweden	102
India	1	Switzerland	52
Ireland	1,304	Turkey	1
Italy	6	Wales	14
Jamaica	1	Scattering	18

Total number admitted 8554, and readmitted 7087, making a total of 15,641 since the organization of the Home.

Respectfully submitted.

CAPTAIN S. M. MONTGOMERY,
Adjutant.

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Adams, Eugene W.	Private	K, 1st Ore. Inf.	12	Oregon	66	$50 00	Kidney trouble	Mar. 28, 1915
Adams, John C.	Private	M, 21st U. S. Inf.	36	Iowa	43	14 00	Chronic bronchitis	Jan. 25, 1907
Adams, Joseph B.	Private	F, 6th Iowa Inf.	42	Ohio	75	50 00	Age	Sept. 14, 1920
Adams, William P.	Private	B, 7th Mo. S. M. Cav.	24	Missouri	79	72 00	Age	Aug. 3, 1923
Affhauser, Fred	Private	U. S. Marine Corps	50	Massachusetts	55		Chronic rheumatism	Oct. 22, 1921
Akers, William	Private	A, 15th N. Y. Inf.	34	New York	78	50 00	Age	Mar. 27, 1922
Allen, Charles B.	Private	K, 4th Tex. Vol. Inf.	5	Texas	57	15 00	Stomach trouble	Apr. 22, 1922
Allen, Hiram	Private	A, 8th Wis. Vet. Inf.	48	Michigan	74	72 00	Rheumatism	Jan. 26, 1917
Allen, Lester S.	Private	D, 3d Ill. V. Inf.	7	Illinois	69	18 00	Age	Mar. 11, 1924
Anderson, Antonio	Private	B, 46th U. S. V. Inf.	20	Norway	48		Stomach trouble	Aug. 13, 1923
Anderson, Edward W.	Private	B, 1st N. Y. V. Inf.	7	California	45		Neurasthenia	Apr. 6, 1922
Anderson, Louis	Private	E, 6th Cal. V. Inf.	7	Norway	55	12 00	Kidney trouble	Apr. 15, 1914
Anderson, Peter	Coxswain	U. S. Navy	36	Sweden	52	15 00	Lumbago	Apr. 27, 1914
Annis, Charles H.	Private	F, 2d Mass. Inf.	11	Massachusetts	63	50 00	Blind	Aug. 2, 1901
Anspack, Henry F.	Private	I, 7th Cal. Inf.	17	Germany	77	50 00	Age	Mar. 13, 1917
Arnold, Carl G.	Private	C, 4th U. S. Inf.	36	Germany	73	20 00	Age	Mar. 27, 1919
Ashenfelder, Frank M.	Private	U. S. Marine Corps	48	Pennsylvania	32		Lumbago	Sept. 18, 1911
Atherton, George B.	Private	G, 18th U. S. Inf.	36	New York	59	18 00	Hernia	Oct. 9, 1912
Atkinson, William H.	Private	C, 5th Me. Vol. Inf.	39	Maine	80	50 00	Age	Apr. 21, 1924
Aubery, James M.	Q. M. Sergeant	N. C. S. 36th Wis. Inf.	5	Vermont	81	50 00	Age	Feb. 18, 1924
Avirett, John A.	Sergeant	I, 14th U. S. Inf.	14	Kentucky	57	30 00	Injury to spine	Nov. 18, 1922
Ayers, Hallie W.	Private	Hosp. Corps, U. S. A.	31	New York	46	12 00	Gastritis	Feb. 17, 1922
Bacigalupi, Charles	Private	G, 6th Cal. Inf.	24	Italy	77	50 00	Injury, left shoulder	June 17, 1916
Backman, Edward	Private	Band, 14th U. S. Inf.	36	Germany	55	12 00	Nervous dyspepsia	Feb. 20, 1924
Bahran, Gustave	Private	C, 5th Mo. Vol. Inf.	7	Germany	60		Rheumatism	May 13, 1924
Bailey, George	Yeoman	U. S. Navy	3	Rhode Island	74		Age	July 17, 1922
Baker, James S.	Sergeant	K, 91st Ind. Inf.	9	Ohio	85	50 00	Age	July 7, 1923
Baker, Karl H.	Private	Hosp. Corps, U. S. A.	8	Massachusetts	60		Rheumatism	Jan. 29, 1924
Baldwin, William T.	Private	D, 1st Cal. Vol. Inf.	11	Pennsylvania	61	12 00	Rheumatism	May 24, 1921
Ball, George H.	Hosp. App.	U. S. Navy	36	Connecticut	49		Rheumatism	Nov. 15, 1923
Ball, Thomas P.	Private	D, 152d Ind. Inf.	7	Ohio	66	50 00	Rheumatism	July 30, 1914
Baltz, Henry W.	Private	A, 33d Penn. Militia	4	Pennsylvania	63	50 00	Cripple hand	Apr. 27, 1905
Bane, Henry (alias Henry Baines)	Private	F, 8th Cal. Inf.	9	New Jersey	63	50 00	Age	June 27, 1908
Barbour, James	Corporal	H, 6th Cal. Vol. Inf.	8	Virginia	57	24 00	Paralysis	May 5, 1921
Barker, Charles R.	Private	F, 134th Ill. Inf., etc.	14	Wisconsin	62	50 00	Rheumatism	July 10, 1910

Barlow, George M.	Private	B, 21st Kans. Vol. Inf.	28	Missouri	63	18 00	Age	May 7, 1924
Barney, John	Private	G, 23d U. S. Inf.	14	Illinois	53		Oval prolapse	Jan. 17, 1922
Barowsky, Henry	Private	C, 169th N. Y. Inf.	5	New York	62	50 00	General debility	June 15, 1909
Barrett, William J.	Private	G, 1st Cal. Vol. Inf.	17	California	52	15 00	Rheumatism	Jan. 6, 1921
Barron, Frank C.	Private	E, 22d U. S. Inf.	36	Wisconsin	46	15 00	Rheumatism	Dec. 16, 1921
Barry, Michael	Sergeant	K, 1st Mont. V. Inf., etc.	34	Ireland	58	12 00	Rheumatism	Jan. 14, 1922
Bartlett, Maurice P.	Private	C, 4th U. S. Cav.	14	California	36	12 00	Blind, left eye	Sept. 8, 1915
Basinger, Frederick	Private	1st Co. Dev. Bn. 166th D. B.	3	Pennsylvania	37		Sciatica	Dec. 18, 1923
Bast, Ulysses S.	Captain	B, 48th Pa. Inf.	36	Pennsylvania	85	72 00	Age	May 7, 1924
Bates, Edwin D.	Private	B, 24th N. Y. Cav., etc.	42	New York	78	50 00	G. S. W., left hip	Oct. 4, 1920
Bauer, George J.	Private	M, 1st U. S. Cav.	167	Pennsylvania	65	20 00	M. and A. regurgitation	June 8, 1919
Beales, Thomas B.	Private	G, 7th Iowa Cav.	24	Tennessee	78	72 00	Age	Apr. 8, 1921
Beamer, Sobeiski	Private	B, 1st Mich. L. Art.	21	Michigan	79	72 00	Age	Sept. 16, 1919
Beck, John W.	Private	G, 12th U. S. Inf.	9	Germany	29		Mastoiditis	Sept. 24, 1920
Beighley, William J.	Private	Hosp. Corps, U. S. A.	12	Pennsylvania	58	15 00	Rupture	July 20, 1923
Belk, John C.	Sergeant	D, 14th Kans. Cav.	39	Missouri	66	50 00	Tumor	Oct. 9, 1912
Bellknapp, Seba	Private	H, 37th Wis. Inf., etc.	9	New York	67	50 00	Stomach trouble	May 5, 1914
Benight, Mark M.	Private	H, 5th U. S. Inf.	36	Illinois	65	12 00	Age	Sept. 25, 1923
Bennett, Frank (alias Andrew J. Mann)	Corporal	C, 4th U. S. V. Inf., etc.	48	Massachusetts	79	50 00	Age	Oct. 11, 1921
Berg, Claus H.	Private	A, 38th U. S. V. Inf.	21	Germany	50	12 00	Piles	Mar. 20, 1922
Berger, Andrew	Private	M, 10th U. S. Inf.	5	Norway	50	30 00	Loss of right foot	June 7, 1924
Bevert, William L.	Corporal	D, 8th Cal. Inf.	10	Georgia	76	50 00	Blind	July 11, 1911
Bezanson, George A.	Private	E, 1st Tex. V. Inf.	5	Nova Scotia	63	15 00	Age	Oct. 24, 1922
Bilyeu, William R.	Corporal	I, 30th U. S. V. Inf.	15	Illinois	45		Paralysis, right hand	May 19, 1924
Birdsell, John A.	Private	K, 46th Ill. Inf., etc.	44	Canada	59	72 00	Blind	Mar. 11, 1899
Birdseye, Daniel M.	1st Lieut.	D, 2d N. Y. Cav., etc.	32	New York	81	50 00	Age	Apr. 22, 1924
Birkner, George W.	Private	D, 1st Cal. H. A.	20	Illinois	68	15 00	Age	Aug. 6, 1923
Bittner, Louis	Private	D, 1st Nev. V. Inf., etc.	39	Germany	43		General debility	July 8, 1907
Black, John J.	Private	A, 1st Cal. H. A., etc.	34	Maine	57	24 00	Neuritis, thigh	May 22, 1924
Blakey, Henry	Private	M, 24th U. S. Inf., etc.	43	Kentucky	33		Hemorrhoids	Dec. 11, 1918
Bliss, Clarence P.	Private	H, 56th Ohio Inf.	13	Ohio	76	50 00	Age	Jan. 16, 1917
Blochlinger, Wilhelm	Private	A, 6th Bn. U. S. Guards	70	Switzerland	62		Age	June 23, 1922
Blodgett, Charles E.	Private	H, 18th N. H. Inf.	9	Vermont	64	50 00	Broken right arm	June 25, 1911
Boggs, Jackson	Farrier	M, 1st Cal. Cav.	36	Iowa	80	50 00	Age	Oct. 9, 1923
Bohler, Jacob (alias Barth)	Private	A, 7th N. Y. Inf.	16	Germany	55	72 00	Age	July 24, 1897
Boland, John W.	Private	B, 2d U. S. Marine Corps	48	West Virginia	32		Rheumatism	Oct. 1, 1914
Bonifas, John D.	Musician	Band 8th U. S. Cav.	35	England	82	24 00	Age	Apr. 14, 1923
Boon, Thomas N.	Private	B, 6th U. S. Inf.	36	Missouri	42	24 00	Broken ribs	Sept. 18, 1915
Borden, George W.	Private	K, 65th N. Y. Vol. Inf.	27	Rhode Island	37	8 00	Rheumatism	Jan. 11, 1906
Bowles, John J.	Corporal	A, 3d Md. Inf.	37	Maryland	71	50 00	Age	Sept. 4, 1915
Boyer, Francis	Landsman	U. S. Navy	36	Massachusetts	64	50 00	Age	Dec. 23, 1913
Brackebush, Otto	Private	B, 132d Ind. Inf.	4	Ohio	74	50 00	Age	Oct. 9, 1922
Bragg, Lemuel L.	Private	A, 32d U. S. V. Inf.	19	Illinois	39	12 00	Malarial fever	Mar. 14, 1915

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA—Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Brandhorst, William	Private	G, 1st U. S. Inf.	36	New York	48	$30 00	Hernia	Nov. 25, 1921
Brannock, Weldon	Private	G, 22d Kans. V. Inf.	5	Virginia	54	12 00	Deformed right arm	May 1, 1924
Branscombe, Matthew	Sergeant	K, 8th U. S. Inf., etc.	191	England	74	20 00	Age	Oct. 10, 1922
Brant, William F.	Private	F, 12th U. S. Inf.	36	Pennsylvania	69	50 00	Age	June 25, 1911
Brantley, Robert L.	Private	B, 81st Ill. Inf.	12	Kentucky	63	50 00	Indigestion	July 13, 1912
Brasher, Robert W.	Private	M, 2d U. S. V. Cav.	6	Nevada	47	24 00	Lame, both feet	Jan. 13, 1917
Braun, Joseph	1st Sergeant	G, 107th Ohio V. Cav.	25	Germany	84	72 00	Age	Apr. 23, 1923
Brinson, Robert R.	Trumpeter	I, 4th U. S. Cav., etc.	108	Indiana	51		Neurasthenia	June 16, 1924
Briody, Philip	1st Sergeant	A, 69th N. Y. Inf.	27	Ireland	52	50 00	General debility	June 7, 1894
Brogan, Anthony	Private	G, 1st U. S. Inf.	60	Ireland	62		Malaria	Apr. 11, 1920
Brophy, John	Sergeant	E, 9th U. S. Inf.	22	Missouri	61	6 00	Rheumatism	Feb. 17, 1922
Brown, Benjamin	Corporal	Band, 24th U. S. Inf.	34	Missouri	56	30 00	Blind	Jan. 12, 1915
Brown, Charles	Private	14th Bat. Mass. L. A.	15	Illinois	78	72 00	Age	Feb. 26, 1923
Brown, Daniel	Private	F, 1st Cal. V. Inf.	15	California	54	24 00	Rheumatism	Sept. 29, 1915
Brown, George E. (alias George E. Wickham)	Sergeant	K, 6th U. S. Cav.	60	England	61		Acute bronchitis	Apr. 7, 1922
Brown, Richard	Private	Hosp. Corps, U. S. A., etc.	157	Maryland	57	12 00	Paralysis, right leg	May 3, 1924
Brown, Robert E.	Private	H, 34th U. S. V. Inf.	19	Texas	47	30 00	General debility	Oct. 11, 1919
Brown, William H.	Private	Hosp. Corps, U. S. A.	8	Virginia	50	12 00	Rheumatism	Dec. 2, 1922
Buchanan, Joseph R.	Private	I, 5th Ill. Cav.	20	Illinois	78	50 00	Blind	Jan. 19, 1914
Buckley, David	Private	76th Co., C. A. C., U. S. A.	36	Massachusetts	40		Lumbago	Jan. 29, 1923
Bullard, Andrew J.	Corporal	D, 12th Wis. Vet. Inf.	33	Wisconsin	81	50 00	Age	Aug. 6, 1923
Bullard, William	Sergeant	G, 2d Mass. Cav.	28	England	67	50 00	Lumbago	Feb. 7, 1911
Bundy, William	Private	F, 116th Ind. Inf.	7	Indiana	62	50 00	Stomach trouble	Feb. 5, 1910
Burch, Seth	Private	K, 23d U. S. Inf.	36	New York	78	20 00	Age	July 13, 1923
Burdick, Stephen F.	Corporal	C, 60th N. Y. Inf.	16	New York	67	50 00	Rheumatism	Jan. 30, 1906
Burgess, John E.	Private	E, 32d U. S. V. Inf.	21	Missouri	48	15 00	Furunculosis	Dec. 28, 1921
Burnett, Isaac H.	Private	B, 27th N. J. Inf.	10	New Jersey	84	72 00	Age	Feb. 5, 1924
Burns, David	Private	A, 1st Ky. Vol. Cav.	4	Ohio	46	15 00	Paralysis	July 12, 1923
Burns, John	Private	E, 32d U. S. V. Inf.	21	Illinois	46	8 00	Partial paralysis	Oct. 24, 1921
Burns, John J.	Private	M, 26th U. S. V. Inf.	22	New York	56	12 00	Lumbago	Nov. 19, 1923
Burns, Thomas J.	Private	31st Co. C. A. C., etc.	131	Ireland	63	15 00	Cardiac disability	Apr. 5, 1924
Burns, William	Or. Seaman	U. S. Navy	88	England	38		Malaria	Dec. 16, 1911
Burrman, Albert A.	Private	G, 8th Cal. Vol. Inf.	7	Holland	62		Age	Nov. 14, 1921
Burtis, Newton R.	Private	G, 1st Ill. V. Inf.	5	Indiana	63	18 00	Age	Nov. 13, 1923
Byrod, Frederick W.	Private	C, 21st Penn. Cav.	7	Pennsylvania	67	50 00	Rheumatism	July 12, 1906

Calhoun, James W.	Private	L, 9th Ohio Cav.	22	Ohio	69	50 00	Age	July 9, 1917
Call, Alfred L.	Private	E, 1st Ill. Lt. Art.	39	Vermont	80	50 00	Age	Aug. 23, 1922
Cameron, Henry I.	Musician	A, 6th Iowa Inf.	6	Ohio	87	50 00	Age	Mar. 8, 1924
Campbell, Henry J.	Private	U. S. Marine Corps	60	Malta Island	60	15.00	Anemia	July 10, 1923
Campbell, James (alias James Conner)	Or. Seaman	U. S. Navy	15	Wash., D. C.	84	50 00	Age	Mar. 26, 1924
Card, Oren M.	Private	A, 188th Pa. Inf.	12	New York	76	50 00	Chronic rheumatism	Dec. 15, 1919
Carels, John H.	2d Lieut.	E. 82d Pa. Inf.	38	Pennsylvania	81	72 00	Age	Apr. 19, 1912
Carleton, Frederick C.	Private	I, 40th U. S. V. Inf.	21	Ohio	51	15 00	Cystitis	July 23, 1923
Carlin, Joseph A.	Private	L, 3d U. S. Art.	14	California	45	15 00	Hernia	Mar. 6, 1924
Carlston, Lang	Private	H, 1st Idaho V. Inf.	16	Iowa	51	30 00	Tuberculosis	Oct. 8, 1917
Carpenter, Frederick H.	Corporal	D, 17th Conn. Inf.	35	Connecticut	83	50 00	Age	Aug. 8, 1923
Carpenter, George	Private	F, 2d Mich. Inf.	15	Michigan	77	50 00	Age	May 7, 1924
Carroll, George H.	Private	H, 20th Mass. Inf.	13	Massachusetts	68	50 00	Lung trouble	July 15, 1895
Carroll, James	Private	K, 35th U. S. V. Inf.	21	California	48	12 00	Bronchitis	Jan. 17, 1922
Carter, Jesse L.	Private	M, 2d Ore. V. Inf.	14	Oregon	43		Inactive urinary tract	May 16, 1924
Case, John J.	Corporal	B, 4th Mo. Cav.	37	Missouri	65	50 00	Age	Dec. 21, 1907
Casey, Peter F.	Private	F, 6th Cal. V. Inf.	7	Rhode Island	54		Malaria	Oct. 24, 1921
Cassaday, William A.	Private	K, 10th Ill. Inf.	41	Illinois	71	50 00	Age	Jan. 20, 1911
Center, Thomas L.	Private	C, 9th U. S. Cav.	23	California	37	12 00	Neurasthenia	Aug. 2, 1923
Chalker, William	Sergeant	K, 1st U. S. Inf., etc.	225	New York	61	20 00	Hernia	Dec. 25, 1912
Chambers, James	Seaman	U. S. Navy	13	Pennsylvania	54	50 00	Loss of left arm	Dec. 23, 1893
Chesley, George A.	Private	U. S. Marine Corps	16	Nebraska	31	24 00	Dislocation right hip	Apr. 20, 1912
Childress, James	Private	A, 34th U. S. V. Inf.	18	Kentucky	69		Age	May 21, 1923
Clagett, George E.	Private	C, 5th N. H. Inf.	9	Louisiana	66	50 00	Age	Mar. 18, 1908
Clark, Charles	Private	M, 1st Wash. V. Inf., etc.	40	Illinois	54	12 00	Kidney trouble	June 27, 1913
Clark, Charles, No. 2	Private	B, 1st Cal. H. A.	8	Ohio	51	15 00	Broken knee	Dec. 3, 1923
Clark, Dudley W.	Private	I, 5th Mo. V. Inf.	7	Missouri	45	12 00	Operation, stomach	Dec. 13, 1922
Clark, Henry H.	Private	G, 7th Cal. Inf.	20	Michigan	58	50 00	Rheumatism	Dec. 16, 1903
Clark, Joseph	Private	I, 1st R. I. V. Inf.	10	England	60	30 00	Tuberculosis	Apr. 21, 1924
Clausen, Peter	Private	C, 7th U. S. Cav.	26	Germany	59	6 00	Rheumatism	Nov. 21, 1922
Cleland, Frank S.	Private	C, 1st Cal. V. Inf.	17	California	54	12 00	Influenza	May 8, 1922
Cletner, Martin (alias Martin Cubler)	Private	C, 3d N. J. Cav.	19	Pennsylvania	57	50 00	Lung trouble	Jan. 31, 1901
Cobb, Darwin L.	Private	E, 8th Cal. V. Inf.	7	Wisconsin	63		Age	Mar. 18, 1924
Cody, George W.	Corporal	H, 8th Kans. Inf.	38	Michigan	81	50 00	Age	Sept. 27, 1923
Collins, Patrick	Private	H, 69th N. Y. V. Inf.	8	Ireland	52		Rheumatism	Feb. 23, 1922
Combs, George A.	Private	M, 43d U. S. V. Inf.	21	California	44		Blind	Feb. 26, 1923
Conklin, James N.	Private	D, 8th N. J. Inf.	48	New York	62	50 00	Age	Dec. 14, 1904
Connery, John	Private	E. 16th, Pa. V. Inf.	6	New York	66		Age	Feb. 5, 1924
Constant, Christopher	Private	D. Fremonts B. G. Cav.	2½	Germany	79		Age	July 27, 1920
Conway, Thomas J.	Private	K, 1st Cal. V. Inf.	16	Ohio	38		Indigestion	Nov. 1, 1904
Cook, James	Landsman	U. S. Navy	25	New York	80	50 00	Age	Oct. 21, 1922
Cook, James M.	Private	L, 24th U. S. Inf., etc.	40	Alabama	53	15 00	Paralysis, right leg	July 28, 1923

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA—Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Cooley, Jonothan L.	Private	F, 6th Tenn. Cav	14	Tennessee	49	$50 00	G. S. W., right thigh	Dec. 5, 1894
Cooper, Jack H.	Corporal	K, 40th U. S. V. Inf	21	California	43	30 00	Rheumatism	Jan. 8, 1919
Corbet, John	Private	U. S. Marine Corps	60	Ireland	47	15 00	Broken hip	Oct. 28, 1909
Corrigan, William	Private	G, 4th Cal. Inf	36	Ireland	73	50 00	Stomach trouble	Aug. 9, 1913
Coulter, Otto R.	Private	F, 7th Cal. V. Inf	6	Illinois	50	15 00	Sciatica	July 26, 1920
Counts, George W.	Private	D, 47th Mo. Inf	4	Arkansas	69	50 00	Age	July 14, 1917
Court, Ernest	Oorporal	B, 10th U. S. Inf.	36	Missouri	43	30 00	Ataxia, both legs	May 15, 1919
Courtright, John R.	Private	F, 13th Ohio Inf., etc	37	Ohio	83	72 00	Age	Apr. 12, 1920
Cowen, John Q.	Private	E, 142d Ill. Inf., etc	10	Illinois	66	50 00	Crippled hand	Oct. 3, 1910
Cowing, Myron	Private	F, 31st Wis. Inf	34	New York	63	50 00	Age	Mar. 29, 1909
Crandall, Samuel B.	Private	A, 9th Ill. V. Inf., etc	89	Ohio	50	15 00	Rheumatism	June 13, 1910
Crary, Archie W.	Private	I, 52d Iowa V. Inf	5	Iowa	47	--------	Neurasthenia	June 1, 1923
Crawford, John T.	Private	A, 23d U. S. Inf	54	Texas	49	12 00	Cerebral apoplexy	Nov. 19, 1923
Crea, Robert	Private	G, 1st Idaho V. Inf	17	Idaho	50	14 00	Dyspepsia	Aug. 27, 1923
Cronin, John	Seaman	U. S. Navy	33	Ireland	56	--------	Rheumatism	Jan. 21. 1924
Crowell, William	Corporal	M, 6th Mo. V. Inf., etc	33	Indiana	60	--------	Chronic asthma	July 2, 1923
Cummings, Charles W.	Private	F, 1st Mass. Cav	21	New Hampshire	75	50 00	Age	Aug. 22, 1917
Cummings, William	Private	12th Mass. Lt. Bat. Ar	31	Maine	60	50 00	Rupture	Dec. 17, 1904
Curtis, Jasper D.	Private	B, Utah L. A	13	Utah	52	15 00	Chronic bronchitis	Nov. 17, 1923
Dace, John	Private	C, 151st Ill. Inf	11	Missouri	66	50 00	Partial paralysis	Jan. 13, 1915
Daggett, Samuel W.	Wagoner	B, 4th Cal. Inf	36	Maine	85	50 00	Age	Feb. 7, 1924
Daley, Thomas J.	Private	F, 1st Cal. V. Inf	15	California	44	15 00	Dysentery	Jan. 24, 1913
Dalmas, William W.	Private	F. Pa. Lt. Art	28	Pensylvania	82	72 00	Age	Mar. 23, 1922
Daniels, Charles	Private	M, 49th U. S. V. Inf	20	North Carolina	45	30 00	Locomotor ataxia	Feb. 4, 1918
Daniels, Lewis	Private	B, 10th U. S. Cav	14	Georgia	47	18 00	Loss of fingers, left hand	July 6, 1922
Daum, Henry	Private	B, 24th N. Y. Inf	3	Germany	60	50 00	Age	Oct. 27, 1897
Davies, Henry A.	Private	L, 13th Minn. V. Inf	17	Maryland	53	12 00	Cataract, left eye	Feb. 19, 1923
Davis, Charles	Private	F, 1st Colo. V. Inf	13	Wisconsin	62	--------	Rheumatism	Jan. 16, 1924
Davis, Homer S.	Private	I, 9th Minn. Inf	27	Kentucky	89	72 00	Age	Mar. 24, 1920
Davis, Nathan	Sergeant	K, 118th Ind. Inf., etc	12	Illinois	78	50 00	Age	July 26, 1920
Davis, Wilson E.	2d Lieut	M, 5th Penn. Cav	27	Pennsylvania	82	50 00	Age	July 16, 1923
Dawson, Thomas	Private	E, 5th U. S. Cav	32	England	73	20 00	Rheumatism	Feb. 8, 1917
Dean, Thomas	Corporal	G, 1st Wis. Inf	37	England	80	72 00	Age	Apr. 23, 1921
Dean, Warren B.	Private	D, 101st Pa. Inf	3	Pennsylvania	68	50 00	Age	Mar. 23, 1915
DeCamp, Lyman B.	Private	A, 137th Ohio Inf	4	Ohio	78	50 00	Age	May 1, 1924
Deckman, Arthur W.	Private	F, 8th Ohio V. Inf	6	Ohio	41	15 00	Paralysis	Dec. 8, 1914

DeGraeve, Valere	Private	Med. Dept., U. S. A.	5	Belgium	52		Gastritis	Feb. 2, 1921
De Jarnac, Edmund	Musician	Band, 8th U. S. Inf.	121	France	67	30 00	Blind	July 12, 1914
Denison, William H.	Artificer	A, 1st N. Y. V. Inf., etc.	23	Canada	59	24 00	Chronic gastritis	Jan. 17, 1921
Devlin, John J.	Private	Hosp. Corps, U. S. A.	14	California	49	6 00	Gastric operation	Dec. 18, 1922
Dewald, Charles P.	Private	E, 14th U. S. Inf.	36	Virginia	45	15 00	Throat trouble	Mar. 2, 1917
Dibble, Harry H.	Corporal	G, 8th Ohio V. Inf.	6	Pennsylvania	49	15 00	Interstitial nephritis	Apr. 10, 1924
Dickerson, George M.	Private	D, 2d Ill. L. A.	37	New York	73	50 00	Age	Dec. 20, 1916
Dickinson, Cassius M.	Corporal	L, 1st Mo. V. Inf.	5	Ohio	61		Rheumatism	July 8, 1923
Dickson, David	Private	F, 12th Mo. Cav.	18	Missouri	69	50 00	Heart trouble	June 18, 1915
Dickson, William	Private	D, 9th U. S. Vet. Vols.	49	Scotland	70	50 00	Rheumatism	Dec. 13, 1907
Dillane, James	Sergeant	I, 4th U. S. Inf.	36	Massachusetts	68	20 00	Age	May 3, 1915
Diven, Murray	Private	H, 19th U. S. Inf., etc.	108	Kentucky	47		Rheumatism	Jan. 25, 1923
Dixon, Frank J.	Private	G, 32d U. S. Inf., etc.	37	England	63		Asthma	Mar. 2, 1905
Dobner, James L.	Private	G, 1st Cal. V. Inf.	11	California	50	30 00	Lung trouble	Mar. 26, 1924
Dodge, David A.	Captain	I, 18th Mich. Inf.	3	New York	88	50 00	Age	Feb. 13, 1924
Dodini, James A.	Private	H, 1st Cal. V. Inf.	16	Switzerland	59	15 00	Rheumatism	Jan. 2, 1924
Doerr, Henry	Private	F, 11th N. Y. S. M. Inf.	14	Germany	74	50 00	Rheumatism	Aug. 19, 1919
Doherty, Daniel	Private	G, 5th R. I. H. A.	9	Ireland	70	72 00	Paralysis	May 1, 1914
Dolan, Patrick	Private	A, 5th U. S. Cav.	36	Ireland	56	50 00	General debility	Nov. 19, 1894
Dominicus, Frederick	Private	M, 8th Cal. V. Inf.	6	Denmark	61		Neurasthenia	Nov. 15, 1923
Donahoo, William J.	Private	I, 14th Ill. Cav.	18	Ohio	66	50 00	Age	Oct. 8, 1912
Donlon, Dennis G.	Or. Seaman	U. S. Navy	10	Ireland	63	50 00	Lumbago	Dec. 13, 1910
Donlon, Thomas	Sergeant	D, 14th U. S. Inf.	67	Ireland	81	50 00	Age	Nov. 15, 1923
Donohue, James	Private	E, 15th U. S. Inf.	36	New Jersey	54		Rheumatism	Dec. 1, 1923
Dority, Henry W.	Private	Unassigned 19th Me. Inf.	2	Maine	49	72 00	Blind	Dec. 21, 1895
Doyle, Joseph S.	Private	H, 5th U. S. Inf.	37	New York	53	18 00	Rheumatism	Sept. 13, 1923
Doyle, Michael	Private	G, 4th U. S. Cav.	14	Ireland	52		Rheumatism	Dec. 12, 1922
Doyle, Philip T.	Private	A, 23d U. S. Inf.	10	Pennsylvania	56	20 00	Broken left wrist	Dec. 22, 1914
Draper, Thomas D.	Private	H, 4th Cal. Inf.	37	New York	65	72 00	General debility	Mar. 14, 1899
Drummond, Benjamin	Private	D, 7th Cal. Inf.	19	Illinois	62	50 00	Rheumatism	Dec. 15, 1909
Dudley, Henry	Private	C, 1st Ter. V. Inf.	7	California	46		Ulcer on leg	Mar. 24, 1924
Dunbar, Joseph	Private	A, 58th Pa. Inf.	39	England	70	72 00	Age	July 5, 1912
Dunn, Harry	Private	I, 15th U. S. Inf.	11	England	55	24 00	Chronic bronchitis	July 25, 1921
Dunn, Michael C. (alias Joseph Smith)	Landsman	U. S. Navy	25	Louisiana	65	50 00	Broken ribs	Mar. 11, 1902
Dupont, John	Private	K, 8th Cal. V. Inf.	7	Holland	56		Kidney trouble	Nov. 24, 1920
Durney, James N.	Private	6th Bat., 1st Me. L. A.	31	Maine	72	72 00	Age	Jan. 21, 1916
DuRoss, William	Private	U. S. Marine Corps	60	Maine	51		Hemorrhoids	June 12, 1924
Durst, Fred	Private	Hosp. Corps, U. S. A., etc.	86	Wisconsin	54		Rheumatism	Mar. 1, 1921
Dushane, Jesse P.	Private	K, 100th Pa. Inf.	32	Pennsylvania	74	50 00	Age	Apr. 15, 1916
Duval, Roger	2d Lieut.	H, 35th U. S. V. Inf.	19	Maryland	56	30 00	Double hernia	Apr. 24, 1922
Dwyer, Patrick	Private	F, 1st U. S. Inf.	59	Ireland	54	12 00	Crippled right leg	Apr. 6, 1914
Eagan, Patrick	Private	B, 1st Cal. V. Inf.	16	Massachusetts	55	18 00	Asthma	Feb. 11, 1924
Earnest, Melville C.	Private	A, 7th U. S. Inf., etc.	45	Tennessee	51	12 00	Diarrhea	Feb. 7, 1922

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA—Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Eikenberry, Andrew	Private	D, 9th Ind.	16	Indiana	80	$50 00	Age	May 21, 1924
Elliott, Henry	Private	M, 11th U. S. V. Cav.	18	Maryland	57		Asthma	Jan. 5, 1916
Ennis, Ira V.	Private	B, 1st Cal. H. A.	9	New Jersey	42	30 00	Bronchitis	May 16, 1903
Esselstyn, Samuel G.	Private	M, 12th Minn. V. Inf.	6	Wisconsin	65	18 00	Hernia	June 27, 1922
Estey, Grant S.	Private	H, 6th Cal. V. Inf.	7	California	59	24 00	Rheumatism	Feb. 10, 1923
Evans, James E.	Private	H, 12th Ind. V. Inf., etc.	48	Ohio	76	72 00	Age	Apr. 11, 1921
Evans, John W.	Carpenter's Mate	U. S. Navy	32	New York	47	30 00	Deafness	July 18, 1911
Evarts, Aranthus	Private	B, 8th Ill. Cav., etc.	11	Iowa	60	50 00	Rheumatism	Dec. 23, 1904
Fairbanks, Albert F.	Private	D, 43d Mass. Inf.	11	Massachusetts	73	50 00	Rheumatism	Mar. 27, 1918
Fales, Charles E.	Private	K, 9th N. Y. V. Inf., etc.	71	Maryland	51	30 00	Deafness	July 8, 1915
Fanning, Amasa S.	Private	H, 5th Iowa Cav.	5	Illinois	79	50 00	Age	Feb. 26, 1924
Feeny, John	Private	I, 1st U. S. Art., etc.	276	Connecticut	51		Varicose veins	Feb. 14, 1922
Felty, Thomas L.	Private	C, 9th Ill. V. Inf.	11	Illinois	71	18 00	Age	Mar. 15, 1923
Fenton, Edgar S.	Private	C, 12th Pa. Reserve Inf.	38	Pennsylvania	80	50 00	Age	May 7, 1924
Ferchland, Charles	Private	I, 1st Cal. V. Inf.	15	Germany	57	30 00	Bronchitis	Aug. 16, 1912
Ferera, Eugene	Private	Casual, C. A. C., U. S. A.	36	Italy	43	18 00	Tuberculosis	Oct. 9, 1912
Fernald, Thomas C. (alias Thomas Vila)	Musician	E, 9th Minn. Inf.	3	Massachusetts	65	50 00	Age	Sept. 16, 1914
Ferree, Samuel	Private	G, 31st U. S. V. Inf., etc.	32	Kentucky	53		Rheumatism	Feb. 5, 1919
Ferrell, Theodore H.	Private	8th Co., Wis. Lt. Art.	17	Ohio	77	50 00	Age	Mar. 10, 1924
Fields, Anthony	Private	D, 1st Maine Inf.	38	Maine	74	50 00	Age	May 28, 1918
Finnigan, Edward	Corporal	E, 1st Cal. V. Inf.	16	California	51		Rheumatism	Feb. 9, 1924
Fitzpatrick, Thomas J.	Sergeant	A, 1st Cal. H. A.	16	California	48	30 00	Fracture, collar bone	Jan. 8, 1923
Flanagan, John J.	Private	K, 17th U. S. Inf.	72	Pennsylvania	40	60 00	Loss of fingers, right hand	Feb. 17, 1921
Fleming, James	Private	I, 12th U. S. Inf.	6	Ireland	64		Age	Dec. 10, 1923
Flynn, Edmund W.	Private	I, 5th Wis. Inf.	39	New York	55	72 00	G. S. W. right arm	July 6, 1894
Flynn, Martin	Fireman	U. S. Navy	36	Ireland	39		Chronic gastritis	Aug. 7, 1908
Fogarty, Frank J.	Private	F, 17th U. S. Inf.	15	California	33	24 00	Rheumatism	Dec. 14, 1906
Foley, John	Private	A, 23d Ill. Inf.	6	Ireland	82	50 00	Age	Apr. 19, 1922
Foord, John G.	Private	A, 1st N. Y. V. Inf., etc.	77	Scotland	52	30 00	Pulmonary disease	Jan. 11, 1922
Ford, Frank E.	Private	F, 8th N. Y. V. Inf., etc.	41	New York	42		Chronic gastralgia	June 12, 1922
Foster, Andrew H.	Private	F, 1st Mich. L. A.	19	New York	69	50 00	Cough	Sept. 12, 1912
Foster, Charles E.	Private	M, 14th U. S. Inf.	36	Kansas	50	12 00	Sore feet	July 7, 1916
Fouke, Frank J.	Corporal	K, 1st Neb. V. Inf.	16	Illinois	54	12 00	G. S. W. right leg—disability	Oct. 1, 1921
Fouke, Richard R.	Corporal	I, 14th Ill. Cav., etc.	33	Virginia	80	50 00	Age	Mar. 10, 1924
Fox, Alexander	Private	C, 177th N. Y. Inf.	11	New York	54	72 00	Age	Nov. 28, 1898

Fox, Fred E.	Corporal	H, 20th Kans. V. Inf.	18	Kansas	59	15 00	Tuberculosis	Dec. 12, 1922
Frazer, Thomas J.	Private	K, 150th Ohio Inf.	3	Ohio	74	72 00	General debility	July 11, 1916
Frear, Chauncey E.	Private	L, 6th N. Y. H. A.	24	New York	54	72 00	Rheumatism	Apr. 22, 1893
Frederick, Jacob	Private	C, 1st Cal. H. A.	9	Louisiana	65	24 00	Rheumatism	Sept. 23, 1920
Friel, John J.	Private	B, 1st U. S. Inf.	62	Ireland	40	24 00	Rheumatism	Nov. 12, 1902
Fry, Isaac L.	Private	B, 55th Penn. Inf.	16	Pennsylvania	75	50 00	Age	Mar. 20, 1922
Fuessel, George A.	Seaman	U. S. Navy, etc.	140	Texas	35	12 00	Bronchial asthma	Jan. 17, 1922
Fulton, Joy	Private	B, 8th Cal. V. Inf., etc.	55	Nevada	46		Rheumatism	Jan. 24, 1924
Furnell, Jesse C.	Corporal	E, 13th Minn. V. Inf.	16	Minnesota	48	12 00	Hernia	June 7, 1924
Gallagher, John	Private	G, 14th U. S. Inf., etc.	25	Massachusetts	43		Neuralgia	Sept. 29, 1910
Gallagher, John F.	Private	F, 35th U. S. V. Inf.	21	Massachusetts	47		Tuberculosis	Dec. 16, 1910
Gallagher, Thomas	Private	K, 15th N. Y. Cav.	19	Ireland	52	50 00	Deafness	Oct. 6, 1897
Gallow, Joseph M.	Private	E, 8th Minn. Inf.	15	New York	64	50 00	Rheumatism	Mar. 24, 1904
Galvin, Joseph	Private	Hosp. Corps, U. S. A.	10	Rhode Island	51	12 00	Asthma	Dec. 12, 1923
Galvin, Timothy T.	Private	A, 7th Ill. V. Inf., etc.	60	Ireland	50		Rheumatism	Dec. 17, 1918
Garrett, Henry M.	Private	G, 24th U. S. Inf., etc.	89	South Carolina	47	30 00	Loss of left leg	Mar. 23, 1923
Garrity, Joseph T.	Private	E, 3d U. S. Art.	36	Massachusetts	50		Rheumatism	Aug. 9, 1921
Geerlink, Simon C.	Private	B, 6th Cal. V. Inf.	5	Holland	69	18 00	Rheumatism	June 27, 1922
George, William H.	Q. M. Sergt.	24th Ky. Inf.	40	Kentucky	78	50 00	Age	Jan. 9, 1918
Geran, Anthony	Private	E, 4th Cal. Inf.	41	California	45	50 00	Rheumatism	Dec. 18, 1893
Gibbs, William	Private	K, 7th U. S. Cav.	40	England	62	20 00	Nephritis	Jan. 11, 1910
Gibson, John E.	Private	G, 8th Mich. Inf.	37	Michigan	76	50 00	Rheumatism	June 25, 1919
Gifford, Charles E.	Private	E, 34th U. S. V. Inf.	18	New York	59		Deafness	Feb. 5, 1924
Gilbert, Horace B.	Sergeant	F, 30th N. Y. Inf.	54	New York	66	72 00	Blind	June 13, 1907
Gill, Marvin	Private	F, 2d Neb. Cav.	8	Pennsylvania	83	50 00	Age	Apr. 3, 1920
Gingher, John T.	Private	I, 9th Pa. Cav.	14	Pennsylvania	71	50 00	Rheumatism	Sept. 28, 1911
Ginnety, James	Private	D, 17th Wis. Inf.	44	Ireland	50	72 00	Age	Dec. 8, 1892
Gleason, James	Landsman	U. S. Navy	9	Massachusetts	48	18 00	La grippe	Dec. 12, 1918
Gowan, Frank V.	Private	G, 14th U. S. Inf.	15	California	39		Result of pneumonia	July 11, 1921
Graham, Robert R.	Private	A, 1st Wyo. L. A.	14	Scotland	48	12 00	Hernia	Dec. 2, 1903
Grammont, John E.	Private	A, 3d U. S. Inf.	36	Wisconsin	43	30 00	Incontinence urine	Feb. 5, 1918
Green, George	Private	D, 1st Cal. V. Inf.	16	New York	42	30 00	Chronic gastritis	Apr. 21, 1921
Green, John	Private	C, 28th U. S. V. Inf.	22	Ireland	48	15 00	Spinal trouble	July 29, 1919
Greenwald, Samuel	2d Lieut.	I, 1st U. S. V. Cav.	5	California	60	18 00	Rheumatism	Aug. 9, 1920
Grey, John	Private	U. S. Marine Corps	216	Massachusetts	63	12 00	Disabled right hand	Mar. 1, 1921
Griffeth, Edward B.	Sergeant	M, 4th Mich. Cav.	35	New York	77	50 00	Age	Sept. 13, 1922
Griffin, Michael F.	Private	H, 46th U. S. V. Inf.	92	Rhode Island	32	8 00	Lumbago	Dec. 16, 1908
Grimes, John L.	Blacksmith	U. S. Navy	70	California	43	24 00	Hernia	Jan. 3, 1912
Griswold, Gaylord	Private	B, 38th Wis. Inf.	16	Wisconsin	71	50 00	Age	Jan. 16, 1917
Gronemeyer, Louis C.	Private	C, 44th U. S. V. Inf.	21	Illinois	48		Rheumatism	Nov. 23, 1923
Gutzman, Julius C.	Private	B, 91st N. Y. Inf.	9	Pennsylvania	65	50 00	Age	June 25, 1907
Hadlock, Walter	Private	C, 6th Iowa Inf., etc.	40	Pennsylvania	80	72 00	Age	July 7, 1923
Haeckl, John J.	Private	A, Bn. U. S. Engs.	12	Australia	48	12 00	Skin trouble	Dec. 11, 1913
Hafner, Andrew	Landsman	U. S. Navy	11	Germany	73	72 00	Paralysis	May 23, 1918

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA—Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Hagaman, Abraham J.	Private	I, 2d Vet. N. Y. Cav.	25	New York	58	$50 00	Rheumatism	Apr. 27, 1903
Hagan, William	Private	M, 9th U. S. Cav.	36	Georgia	40	15 00	Dysentery	Sept. 18, 1918
Haggerty, Michael	Private	G, 9th Mass. Inf.	36	Ireland	72	50 00	Age	May 12, 1914
Haldeman, Oscar	Private	H, 3d U. S. Art., etc.	38	Missouri	52	12 00	Dysentery	Mar. 27, 1924
Hall, George I.	Private	H, 1st Cal. V. Inf.	15	California	57	18 00	Kerato iritis	Aug. 10, 1922
Hall, Henry	Private	E, 8th Pa. Inf.	18	Vermont	71	50 00	General debility	Aug. 15, 1898
Halpin, Hugh S.	Private	I, 23d U. S. Inf.	15	New York	47	18 00	Hernia	Jan. 14, 1924
Hamilton, Frank G.	Sergeant	G, 6th U. S. Inf.	156	New York	69	20 00	Rheumatism	Apr. 1, 1920
Hanes, Frank E.	Private	A, 4th U. S. Inf.	106	Michigan	41		Sciatica	Oct. 28, 1921
Hankins, Winfield S.	Private	Casual, 11th U. S. Inf.	21	New Jersey	34		Rheumatism	Oct. 28, 1913
Hanley, James	Private	L, 1st Me. V. Inf., etc.	24	Rhode Island	57		Gastralgia	Nov. 13, 1923
Hanley, Michael	Private	A, 6th U. S. Inf.	36	Ireland	43	30 00	Piles	Jan. 3, 1913
Hanna, William J.	Capt., Asst. Surg.	1st Cal. V. Inf.	11	California	59		Neurasthenia	June 25, 1924
Hannan, James R.	Private	D, 16th N. Y. H. A.	21	New York	69	50 00	Age	Sept. 24, 1910
Hansen, Simon	Private	Madsens Utah M. Cav.	6	Denmark	77	20 00	Age	July 29, 1920
Hansson, Martin	Ord. Seaman	U. S. Navy	105	Sweden	42	15 00	Rheumatism	Feb. 26, 1911
Hardie, Robert F.	Private	F, 22d U. S. Inf.	36	New York	45	24 00	Nasal catarrh	Apr. 17, 1914
Hardy, Ralph J.	Sergeant	B, 12th U. S. Cav., etc.	41	Iowa	47		Abscess, neck	Dec. 11, 1923
Harkin, Patrick	Private	M, 27th U. S. Inf.	27	Ireland	33	30 00	Tuberculosis	May 24, 1909
Harkness, Oscar L.	Private	K, 78th Ill. Inf.	33	Illinois	65	50 00	Age	Dec. 17, 1909
Harney, Robert	Private	A, 62d Mass. Inf.	1	Massachusetts	62		Sore leg	Jan. 4, 1913
Harrington, Patrick	Corporal	E, 1st Mont. V. Inf.	17	Wash., D. C.	55	15 00	Rheumatism	Sept. 18, 1913
Haskins, Charles	Private	D, 8th N. Y. Cav.	38	New York	62	50 00	Rheumatism	May 1, 1913
Hathaway, George B.	Private	I, 33d Mass. Inf.	36	Massachusetts	62	50 00	Age	Aug. 7, 1908
Haubeil, George J.	Oiler	U. S. Navy	35	New York	65	12 00	Age	Nov. 7, 1921
Haviland, Frank	1st Sergeant	D, 23d U. S. Inf., etc.	96	New York	75	20 00	Age	Oct. 8, 1923
Hawkins, William J.	Private	E, 2d Ill. Cav.	10	Illinois	73	50 00	Lame back	Mar. 23, 1916
Hayes, Hugh	Private	I, 7th Vermont Inf.	4	Ireland	55	50 00	Asthma	Nov. 25, 1897
Hayes, James	Private	E, 1st Maine Cav.	37	New Brunswick	62	50 00	Dyspepsia	Nov. 10, 1901
Hayes, Johnie E.	Private	A, 165th U. S. Inf.	10	Louisiana	26		Arrested tuberculosis	July 13, 1922
Haynes, Wilburn	Private	H, 26th Kans. V. Inf.	4	Kansas	49	12 00	Heart trouble	Nov. 11, 1920
Hazard, Andrew R.	Ensign	U. S. Navy	14	Massachusetts	86	72 00	Age	July 11, 1923
Heacock, Jesse M.	Private	C, 8th Cal. V. Inf., etc.	7	California	48	12 00	Stomach trouble	Oct. 29, 1923
Heales, John	Private	B, 6th Wis. Inf.	43	England	79	50 00	Age	June 10, 1915
Heath, Leon D.	Private	A, 7th Cal. Inf.	18	Illinois	68	50 00	Rheumatism	Nov. 18, 1905
Helstein, Charles	Seaman	U. S. Navy	24	Sweden	67	50 00	Rheumatism	Mar. 7, 1909

Henderson, Thomas A.	Gunners Mate	U. S. Navy	5	Maryland	45	--------	Hemorrhoids	Dec. 5, 1923
Hennessey, James B.	Private	I, 9th U. S. Inf.	26	Illinois	55	--------	Injured left leg	Dec. 12, 1921
Henry, Allen	Private	E, 3d Colo. Cav.	4	Ohio	70	50 00	Age	Sept. 24, 1915
Henry, John J.	Private	D, 47th N. Y. V. Inf.	10	New York	68	18 00	Age	Feb. 11, 1924
Herr, George W.	Corporal	C, 59th Ill. Inf., etc.	63	Pennsylvania	77	72 00	Age	Apr. 23, 1921
Herr, John S.	Private	F, 3d Ky. V. Inf.	12	Kentucky	54	18 00	Bladder trouble	May 1, 1924
Herrier, Philip	Private	K, 13th Ohio Cav.	6	France	67	50 00	Age	Nov. 3, 1911
Herron, Dennis	Private	G, 6th Pa. V. Inf.	5	Pennsylvania	51	15 00	Rheumatism	June 18, 1924
Higgins, John W.	Private	K, 175th Ohio Inf., etc.	11	Ohio	64	50 00	Dropsy	Mar. 26, 1911
Hildebrandt, Martin	Private	E, 2d Ore. V. Inf.	15	Germany	44	24 00	Bronchitis	June 21, 1909
Hill, Aleck	Private	M, 45th U. S. V. Inf.	23	Finland	48	12 00	Rheumatism	Dec. 9, 1914
Hill, Erwin D.	Trumpeter	C, 4th Ohio Cav.	7	Ohio	59	50 00	Rheumatism	Oct. 7, 1902
Hill, George	Private	M, 6th N. Y. Cav.	18	Germany	69	50 00	G. S. W. left breast	Nov. 4, 1914
Hinden, Valentine	Private	K, 14th U. S. Inf., etc.	36	France	66	--------	Rheumatism	Oct. 1, 1909
Hogan, Charles J.	Captain	M, 1st Cal. V. Inf.	16	California	51	17 00	G. S. W. right chest	Jan. 11, 1923
Holmberg, August R. L.	Seaman	U. S. Navy	108	Sweden	57	12 00	Amoeibic dysentery	Feb. 16, 1922
Holmes, Charles A.	Private	H, 9th U. S. Inf.	41	New Brunswick	47	12 00	Sclerosis	Dec. 12, 1908
Honan, James	Private	G, 1st U. S. Cav.	31	Ireland	76	20 00	Age	Jan. 26, 1923
Hood, Edward P.	Private	F, 2d Cal. Inf.	33	New Hampshire	56	50 00	Rupture	Sept. 19, 1896
Hoover, Reuben	Private	B, 152d Inf.	6	Ohio	77	50 00	Age	Mar. 25, 1921
Horn, George W.	Private	G, 1st Colo. V. Inf.	13	West Virginia	64	30 00	Age	Sept. 10, 1923
Hornaday, William H.	Sergeant	F, 63d Ind. Inf.	34	Indiana	78	50 00	Age	Mar. 21, 1923
Hosford, Henry H.	Private	L, 2d U. S. V. Engs.	11	Indiana	63	30 00	Age	Nov. 21, 1917
Horton, Charles N.	1st Cl. Boy	U. S. Navy	25	California	64	50 00	Rheumatism	June 29, 1915
Hough, George H.	Private	H, 35th U. S. V. Inf.	2	California	52	--------	General debility	Mar. 15, 1916
House, Little B.	Private	H, 1st Tex. V. Inf., etc.	26	Alabama	44	12 00	Injury to left arm	Nov. 8, 1911
Hovey, Charles	Musician	C, 21st U. S. Inf.	60	New York	62	20 00	G. S. W. left leg	Dec. 23, 1915
Howard, John W.	Private	H, 14th N. Y. H. A.	19	New York	76	72 00	Loss of left arm	Dec. 30, 1919
Howard, Thomas M.	1st Cl. Fireman	U. S. Navy	36	Kentucky	44	12 00	Rheumatism	Jan. 19, 1908
Hoyt, James M.	Private	E, 27th Ill. Inf.	37	Ohio	68	50 00	Age	Oct. 21, 1909
Hubbard, James L.	Private	D, 6th Mo. V. Inf., etc.	46	Indiana	45	15 00	Gastritis	Sept. 11, 1917
Hubbard, Joseph B.	Sergeant	K, 1st Fla. V. Inf., etc.	102	Virginia	50	--------	Rheumatism	June 28, 1923
Hudson, Thomas M.	Private	Hosp. Corps, U. S. A., etc.	103	South Carolina	43	24 00	Drop wrist	Sept. 21, 1914
Hughes, Charles	2d Cl. Machinist	U. S. Navy	22	England	48	15 00	Asthma	Aug. 10, 1914
Hughes, John B.	Private	A, 15th Minn. V. Inf.	8	Ireland	46	--------	Pleurisy	May 27, 1922
Hughes, John W.	Private	H, 1st S. D. V. Inf.	15	California	53	--------	Rheumatism	Nov. 14, 1917
Hughey, George W.	Private	B, 4th Ohio Cav.	33	Ohio	67	50 00	Rheumatism	Oct. 8, 1912
Hunter, George E.	Sergeant	A, 4th U. S. Cav.	60	Nova Scotia	73	20 00	Rheumatism	Oct. 6, 1919
Hunter, William	Musician	B, 188th Pa. Inf.	15	Pennsylvania	72	50 00	Age	May 14, 1917
Hunton, George B.	Private	H, 33d U. S. V. Inf.	20	Virginia	51	--------	General debility	Apr. 11, 1917
Hurd, Alfred D.	Private	C, 111th N. Y. Inf.	34	New York	68	50 00	Rheumatism	Feb. 8, 1912
Hutchison, Robert	1st Sergeant	N, 6th U. S. Art.	216	Maryland	68	30 00	Age	May 10, 1924
Hynes, John A.	1st Lieut. Adjt.	I, 17th Ill. Cav.	18	Wisconsin	50	50 00	Loss of fingers	Oct. 19, 1893
James, William W.	Private	4th Ind. Horse Bat., Wis. V.	19	Pennsylvania	83	50 00	Age	Apr. 7, 1922

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA—Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Jenkins, Robert	Private	4th, 2d Bn. V. R. C. U. S. A.	28	New York	75	$50 00	Age	May 5, 1921
Johnson, Charles H	Private	I, 4th U. S. Inf.	12	New York	57	12 00	Blood disease	Feb. 4, 1915
Johnson, David M	Private	G, 24th U. S. Inf.	25	Tennessee	40	10 00	Pneumonia	June 3, 1921
Johnson, John T	Private	E, 1st Cal. V. Inf.	15	California	48	30 00	Eye disease	July 3, 1922
Johnston, Charles E	Private	K, 9th U. S. Cav.	36	Kentucky	48	65 00	Loss of right leg	Mar. 9, 1913
Johnstone, William	Artificer	L, 30th U. S. V. Inf.	19	Michigan	38	30 00	Pneumonia	Aug. 7, 1918
Jones, Hampton H	Private	I, 14th Iowa Inf.	16	Pennsylvania	83	50 00	Age	July 13, 1918
Jones, Harry	Artificer	A, 29th U. S. V. Inf.	20	California	77	18 00	Age	Apr. 17, 1924
Jones, James T	Private	G, 41st Ill. Inf.	35	Illinois	70	50 00	Chills and fever	July 6, 1916
Jones, Rupert H	Private	A, 5th Ohio V. Inf.	5	Canada	43	30 00	Tuberculosis	Oct. 28, 1921
Jordan, John F	Private	E, 19th Mass. Inf.	19	Massachusetts	78	50 00	Age	Dec. 7, 1920
Jordan, Samuel P	Private	C, 2d La. V. Inf., etc.	66	Alabama	51	12 00	Influenza	Jan. 11, 1923
Josselyn, Joseph H., Jr	Corporal	C, 2d Cal. Inf.	17	Massachusetts	63	50 00	Rheumatism	Sept. 27, 1909
Kane, Thomas J	Private	C, 4th U. S. Inf.	7	Pennsylvania	52		Rheumatism	Dec. 2, 1922
Karr, William	Private	B, 9th Mich. Cav.	21	Pennsylvania	73	50 00	Age	May 8, 1911
Kaufman, Charles	Private	M, 10th N. Y. Cav.	7	Germany	72	50 00	Age	July 8, 1913
Kaufman, Charles F	Sergeant	G, 2d Ore. V. Inf.	15	Illinois	42	12 00	Gastric ptosis	Oct. 1, 1915
Kavanaugh, Robert P	Corporal	L, 7th Ill. V. Inf.	5	Ireland	53	12 00	Malaria	Jan. 5, 1922
Keefe, Charles I	Private	O, 6th U. S. Art.	17	California	54	12 00	Rheumatism	Feb. 4, 1918
Keeland, Edward	Private	B, 3d U. S. Cav.	60	Michigan	65		Rheumatism	Dec. 29, 1916
Kelley, Edgar	Private	A, 45th U. S. V. Inf.	21	New York	52		Operation, nose	Apr. 13, 1917
Kelley, John J	Private	H, 9th U. S. Inf.	36	Massachusetts	52		Kidney trouble	May 6, 1924
Kelley, Thomas J	Private	I, 5th Ill. Cav.	20	Illinois	65	50 00	Rheumatism	Feb. 9, 1912
Kelley, John	Private	M, 47th U. S. V. Inf.	21	Ireland	48	15 00	Rheumatism	Dec. 29, 1914
Kemp, Walter E	Corporal	K, 1st Cal. V. Inf.	18	California	45	30 00	Rheumatism	June 17, 1921
Kennedy, Edward	Private	D, 13th U. S. Inf.	36	England	47		Rheumatism	Feb. 25, 1924
Kenney, James (alias James Flynn)	Private	G, 2d U. S. Cav.	60	Ireland	71	20 00	Age	Feb. 19, 1921
Kenoyer, Lemuel	Private	I, 51st Mo. Inf.	4	Missouri	76	50 00	Age	Jan. 28, 1923
Keyser, Albert	Private	Band, 13th U. S. Cav., etc.	76	Colorado	47	21 00	Fracture, right tibia	Apr. 12, 1920
Kidder, John W	Private	D, 3d Wis. Inf.	54	Wisconsin	72	50 00	Age	Dec. 18, 1915
King, William	Private	F, 2d Cal. Inf.	36	England	58	72 00	Blind	Jan. 22, 1903
Kinsley, Richard	Private	H, 4th U. S. Inf.	60	Massachusetts	64	20 00	Age	Dec. 4, 1918
Kirkland, Duncan	Private	H, 13th U. S. Inf.	36	Kansas	54	14 00	Rheumatism	Aug. 27, 1923
Knapp, Orris	Sergeant	A, 3d Colo. Cav.	4	Massachusetts	84	50 00	Age	Nov. 15, 1916
Knickmeyer, William	Private	I, 1st Mo. Art.	36	Germany	64	50 00	Heart disease	May 26, 1904

Knowlton, Frederick L.	Private	H, 14th Me. Inf.	17	Maine	77	50 00	Age	Jan. 8, 1924
Knott, Thomas	Private	K, 2d Mo. Cav.	36	Ohio	62	50 00	Rheumatism	Sept. 25, 1904
Knowles, Augustus	Private	B, 35th Iowa Inf.	36	Connecticut	73	50 00	Kidney trouble	Jan. 16, 1917
Koopman, Frederick	Private	E, 5th U. S. Cav., etc.	36	Germany	46		Nervousness	Sept. 25, 1920
Kosky, John J.	Private	G, 67th U. S. Inf.	20	Russia	30		Neuritis	Feb. 15, 1923
Kraemer, William	Private	C, 61st N. Y. Inf.	16	Germany	67	50 00	Age	Jan. 7, 1914
Kroning, Ernest	Seaman	U. S. Navy	6	Germany	49	30 00	Stomach trouble	Nov. 3, 1910
Krzyanowski, Thomas	Private	E, 39th U. S. Art.	11	Poland	35		Tuberculosis	Dec. 29, 1923
Kuhsel, Gustave	Private	M, 3d N. J. Cav., etc.	56	Germany	75	50 00	Asthma	Apr. 16, 1919
Kyle, Elzie R.	Private	Hdqrs. Co., 364th Inf.	1	Ohio	37	30 00	Rheumatism	June 24, 1924
Kyle, Heston O.	Private	H, 20th Ohio Inf.	25	Ohio	72	50 00	Age	Jan. 8, 1916
Lahey, Patrick F.	Private	D, 11th U. S. Inf.	7	Pennsylvania	53	12 00	Deafness	Oct. 25, 1923
Lamb, Henry S.	Corporal	C, 42d Wis. Inf.	10	Ohio	71	50 00	Age	June 19, 1914
Lamon, Leander E.	Private	C, 1st Idaho V. Inf.	14	Indiana	57	12 00	Stomach trouble	Oct. 26, 1915
Lansdale, George R.	Private	A, 3d U. S. Cav.	60	Maryland	71	20 00	Age	July 23, 1923
Lausen, Herman	Private	A, 12th N. Y. V. Inf.	11	Denmark	62		Age	Aug. 28, 1923
Lavoy, Frank A.	Sergeant	E, 1st U. S. Art., etc.	218	New Hampshire	68	20 00	Age	May 27, 1917
Lawrence, Demarquis L.	Private	K, 22d Me. Inf.	11	Maine	82	50 00	Age	July 19, 1918
Leary, James J.	Sergeant	M, 38th U. S. V. Inf., etc.	53	Ireland	49	18 00	Malaria	Mar. 28, 1922
Leary, Timothy G.	Private	E, 1st Cal. V. Inf.	16	California	47	30 00	Rheumatism	Jan. 4, 1924
Leddy, George A.	Private	D, 8th Cal. V. Inf.	7	Massachusetts	45	12 00	Hemorrhoids	June 11, 1924
Ledgett, George W.	Sergeant	C, 8th U. S. Inf.	14	Wisconsin	61	12 00	G. S. W., left leg	Mar. 18, 1924
Lee, William	Corporal	M, 25th U. S. Inf., etc.	36	Kentucky	48		Aphasia, hemiplegia	Sept. 27, 1914
Leeds, Harry	Corporal	H, 8th U. S. Cav., etc.	72	Ohio	49	18 00	Injury to hip	Feb. 2, 1922
Lennon, Charles	Private	B, 2d U. S. Art.	8	Ireland	47		Sciatica	Feb. 10, 1922
Leonard, Enoch	Private	M, 6th Ill. V. Inf.	5	Illinois	34	18 00	Rheumatism	Sept. 11, 1912
Lillivig, Andrew	Corporal	K, 14th Minn. V. Inf., etc.	66	Norway	44	24 00	Heart disease	Dec. 31, 1910
Lincoln, Horatio D.	Corporal	I, 7th Cal. Inf.	16	Maine	80	50 00	Age	Aug. 22, 1923
Lockwood, James B.	Sergeant	K, 6th U. S. Cav.	35	New York	64		Age	Mar. 10, 1923
Londerman, John	1st Cl. B't's Mate	U. S. Navy	251	Maine	67	58 18	Partial blindness	June 2, 1920
Long, James	2d Cl. Fireman	U. S. Navy	36	Ireland	49	15 00	Heart trouble	Oct. 16, 1922
Long, John	Private	F, 24th N. Y. Cav.	19	New York	60	50 00	Defective sight	Jan. 21, 1904
Long, Solon A.	Private	E, 6th Cal. V. Inf.	5	Indiana	54		Diarrhoea	Sept. 17, 1923
Loos, Thomas F.	Private	K, 61st Ill. Inf.	20	Ohio	79	72 00	Lung trouble	Sept. 24, 1916
Lord, Jacob S.	Musician	Band, 2d Mass. Inf., etc.	24	Massachusetts	55	50 00	Rheumatism	May 17, 1894
Loveridge, Eugene L.	Private	F, 65th N. Y. V. Inf.	4	New York	59	30 00	Left hemiplegia	May 12, 1922
Lung, Warren S.	Private	Signal Corps, U. S. A.	23	Pennsylvania	54	50 00	Rheumatism	June 27, 1901
Lusch, William H.	Cook	D, 32d U. S. V. Inf.	20	Germany	47		Rheumatism	Jan. 25, 1921
Lynch, Jeremiah J.	Private	B, 82d Ohio Inf.	8	Ohio	77	50 00	Age	Jan. 28, 1924
Lynch, John	Private	A, 1st Cal. H. A., etc.	31	New York	56	15 00	Bronchitis	Sept. 27, 1910
Lyons, Franklin	Fireman	U. S. Navy	36	Rhode Island	46	15 00	Heart trouble	Mar. 20, 1909
Lyons, Joseph D.	Ord. Seaman	U. S. Navy	47	New York	53	12 00	Sciatica	Mar. 28, 1924
McCafferty, Francis	Private	U. S. Marine Corps	144	Ireland	58	30 00	Asthma	Mar. 6, 1918
McCann, John	Seaman	U. S. Navy	36	Ireland	54	50 00	Hernia	July 26, 1899

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA—Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
McCarron, James H.	2d Lieut.	A, 1st Bn. U. S. Guards	54	Massachusetts	56		Rheumatism	Feb. 11, 1921
McCarthy, James J.	Private	A, 3d U. S. Art.	10	California	52	$12 00	Lumbago	Sept. 8, 1922
McCarty, Thomas	Private	I, 30th U. S. Inf., etc.	52	New York	48	17 00	Tuberculosis	Aug. 17, 1920
McClintic, Michael S.	Private	C, 3d Colo. Cav.	4	Iowa	76	50 00	Age	Sept. 14, 1912
McConnell, Rudolph C.	Private	B, 13th Pa. Cav.	23	Pennsylvania	69	50 00	Stomach trouble	Oct. 25, 1917
McCown, John W.	Private	K, 5th Mo. V. Inf.	4	Missouri	59	30 00	Asthma	Feb. 27, 1914
McCoy, William	Corporal	D, 2d Cal. Cav.	43	Ohio	74	72 00	Age	June 17, 1910
McDonald, Joseph A.	Private	C, 9th Mass. V. Inf.	6	Massachusetts	48	18 00	Rheumatism	Nov. 24, 1923
McDowall, John R.	Private	L, 4th Tex. V. Inf.	7	Iowa	50	24 00	Heart trouble	Nov. 14, 1912
McEvoy, Joseph T.	Private	G, 1st Cal. V. Inf.	16	California	45	24 00	Partial paralysis	Feb. 11, 1924
McFadden, Thomas A.	Private	A, 7th U. S. Inf., etc.	145	Pennsylvania	41		General debility	July 5, 1921
McFarland, Presley A.	Private	H, 23d U. S. Inf.	9	Arkansas	38	12 00	Chronic appendicitis	Jan. 26, 1915
McGarigal, James	Fireman	U. S. Navy	72	Ireland	66	30 00	Age	Oct. 1, 1923
McGilloway, James	Corporal	E, 1st Cal. V. Inf.	15	Ireland	62	30 00	Paralysis, left arm	July 24, 1922
McGue, John J.	Private	L, 16th Kans. Cav., etc.	20	Michigan	67	50 00	Heart disease	Apr. 26, 1914
McIntyre, Charles S.	Private	C, 7th Ill. V. Inf.	5	Illinois	54		Neuralgia	July 20, 1909
McKenzie, Duncan	Artificer	L, 1st Cal. V. Inf.	16	Scotland	58		Gastric disturbances	June 9, 1924
McMains, Alfred	Private	K, 8th Cal. V. Inf., etc.	24	California	40	24 00	Stomach trouble	May 21, 1915
McMillan, David	Private	H, 9th Ill. Cav.	8	Canada	70	50 00	Age	Feb. 15, 1916
McNamara, John W.	Private	A, 23d U. S. Inf., etc.	33	Kansas	58	24 00	Asthma	Apr. 5, 1924
McNames, Calvin	Private	M, 17th Ill. Cav.	23	Canada	64	50 00	Nervous debility	Apr. 24, 1909
McNeil, Charles S.	1st Cl. Boy	U. S. Navy	12	New York	75	50 00	Age	Feb. 20, 1923
McNeirney, John J.	Fireman	U. S. Navy	256	Ireland	50	37 38	Dislocation, shoulder	July 26, 1910
McPherson, August W.	Private	F, 21st N. Y. Inf.	24	Indiana	70	50 00	General debility	Oct. 5, 1909
MacPherson, John H.	Private	Band, 1st Mont. V. Inf.	17	Maryland	45	15 00	Rheumatism	Nov. 19, 1914
McWilliams, John C.	Private	A, 13th Iowa Inf.	14	Ohio	73	50 00	Age	Jan. 8, 1914
Magee, Preston M.	Private	K, 148th Pa. Inf.	33	Pennsylvania	81	50 00	Age	May 19, 1924
Maguire, James	Musician	I, 5th U. S. Inf., etc.	99	New York	61		Bruised leg	Sept. 21, 1921
Mahan, Joseph	Private	K, 9th R. I. Inf., etc.	31	Ohio	50	72 00	Lumbago	Dec. 5, 1896
Mahoney, Daniel	Landsman	U. S. Navy	35	Ireland	55	50 00	Age	Apr. 29, 1903
Mahoney, James	Private	A, 2d Me. Cav.	9	Canada	68	50 00	Pneumonia	Oct. 7, 1911
Malley, William	Private	G, 8th Cal. Inf.	11	Ireland	68	50 00	Deafness	Mar. 17, 1907
Maloney, Michael	Private	K, 193d N. Y. Inf.	9	Canada	68	50 00	Rheumatism	Feb. 1, 1916
Mansell, James	Private	E, 12th Md. Inf., etc.	10	Maryland	79	50 00	Age	Sept. 17, 1923
Marple, Charles	Private	C, 6th U. S. Art., etc.	39	California	55	24 00	Rheumatism	Sept. 24, 1918
Marquis, Ellison	Private	F, 143d Ind. Inf.	10	Indiana	61	50 00	Rheumatism	June 6, 1909

Marshall, Jared B.	Private	B, 3d Mo. V. Inf.	5	Pennsylvania	51		Hemorrhoids	July 18, 1921
Martin, Henry	Landsman	U. S. Navy	9	England	64	50 00	Heart disease	Feb. 15, 1906
Mason, Charles M.	Private	H, 30th Me. Inf.	20	Maine	59	50 00	Rheumatism	Oct. 10, 1903
Massey, John H.	Chief Machinist	U. S. Navy	24	California	61		Hernia	Dec. 13, 1922
Matthews, Bud P.	Artificer	A, 10th U. S. Inf.	32	North Carolina	62		Rheumatism	July 4, 1917
Mathews, Orin O.	Private	A, 1st Ter. V. Inf., etc.	23	Nebraska	50		Rheumatism	Nov. 17, 1921
Mathews, Robert F.	Landsman	U. S. Navy	139	Maryland	51		Rheumatism	Feb. 11, 1919
Mathiesen, Hans C.	Private	K, 4th U. S. Cav.	15	California	31	18 00	G. S. W., left leg	Apr. 5, 1911
Means, Walter E.	Prin. Musician	Band, 2d Ga. V. Inf., etc.	62	Missouri	57	24 00	Hernia	Mar. 20, 1922
Meehan, Thomas	Private	H, 6th Pa. Cav.	36	Ireland	69	72 00	Senility	Dec. 31, 1902
Melody, Hugh J.	Coal Passer	U. S. Navy	118	California	41	15 00	Rheumatism	Nov. 1, 1909
Mercer, John	Private	L, 1st Cal. Cav.	28	Virginia	72	50 00	Chronic bronchitis	Apr. 28, 1904
Merrill, Austin C.	Private	C, 3d U. S. Art.	14	Maine	79	6 00	Age	Mar. 11, 1924
Merriman, Elijah R.	Captain	F, 5th W. Va. Inf.	37	Pennsylvania	83	72 00	Age	Aug. 5, 1919
Mettre, Antone	Private	E, 8th U. S. Inf.	9	Turkey	55	15 00	Rheumatism	Sept. 18, 1923
Metzger, Alfred	Private	I, 155th Ind. Inf.	6	Indiana	68	50 00	Age	Apr. 6, 1915
Meyer, Bruno	Private	C, 8th Cal. V. Inf.	7	Germany	56	12 00	Rheumatism	May 5, 1914
Meyer, Frederick	Private	K, 7th U. S. Inf.	59	Missouri	65	20 00	Age	Sept. 29, 1914
Meyer, Gustave	Private	E, 1st Neb. V. Inf.	14	Wisconsin	48	15 00	G. S. W., right knee	Mar. 30, 1913
Meyer, John	Sergeant	E, 1st U. S. Cav.	60	Germany	60		Rheumatism	Nov. 28, 1913
Mikulich, Jacob C.	Ord. Seaman	U. S. Navy	9	Austria	66	50 00	Rheumatism	Oct. 3, 1909
Millane, Edward T.	Private	M, 13th Minn. V. Inf.	16	Minnesota	41		Rheumatism	Aug. 2, 1921
Miller, Jacob	Private	M, 6th Ohio Cav.	20	Ohio	64	72 00	Rupture	July 7, 1905
Miller, John	Private	B, 1st Wash. Ter. Inf.	36	Wisconsin	71	50 00	Throat trouble	Apr. 24, 1916
Miller, John J.	Private	Hosp. Corps, U. S. A.	36	New York	40	10 00	Ear trouble	Dec. 4, 1916
Miller, Silas H.	Private	F, 12th Ind. Cav.	23	Pennsylvania	82	50 00	Age	July 1, 1922
Milligan, Henry	Private	B, 48th Iowa Inf.	4	Ohio	72	50 00	Rheumatism	July 16, 1920
Mills, Andrew B. V.	Private	E, 23d N. Y. Inf.	24	Pennsylvania	48	50 00	General debility	Aug. 1, 1891
Milner, James R.	Private	A, 74th Ohio Inf.	17	Ohio	78	50 00	Age	Jan. 14, 1924
Moesser, Ulysses S.	Corporal	F, 35th U. S. V. Inf.	19	Utah	57	12 00	Hemorrhoids	Jan. 18, 1923
Moir, George	Private	B, Utah L. A.	4	Scotland	62	24 00	Age	Dec. 6, 1910
Monahan, William	Private	A, 2d N. Y. H. A.	6	Ireland	70	72 00	Blind	Oct. 27, 1908
Moody, Ephriam C.	Private	B, 8th Minn. Inf.	34	Ohio	86	72 00	Age	June 10, 1922
Moody, William H.	Private	I, 9th Me. Inf.	45	Massachusetts	76	50 00	Age	Dec. 16, 1919
Mooney, Francis	Private	B, 71st Pa. Inf.	28	Ireland	73	50 00	Age	Sept. 1, 1915
Moore, Egbert	Private	F, 24th U. S. Inf., etc.	87	Alabama	39		Malarial poisoning	Nov. 24, 1919
Moore, Elijah L.	Sergeant	D, 1st Cal. H. A.	16	Iowa	58		Neuritis	Apr. 1, 1921
Moore, Frank A.	Private	D, 1st Cal. V. Inf.	17	Minnesota	59	15 00	Gastric disturbance	June 18, 1923
Moore, Michael G.	Private	F, 3d U. S. Inf.	16	Ireland	76	20 00	Age	May 10, 1922
Moran, Michael	Private	E, 7th U. S. Cav., etc.	84	England	60		Influenza	Apr. 18, 1923
Morlan, Robert J.	Corporal	I, 2d U. S. V. Engs.	11	Ohio	62	24 00	Rheumatism	Mar. 26, 1913
Morrison, Fred P.	Corporal	E, 6th Cal. V. Inf.	8	New Hampshire	48	12 00	Pleurisy	Sept. 30, 1910
Morton, Charles H.	Private	F, 6th Cal. V. Inf.	5	Connecticut	59	24 00	Lumbago	Aug. 9, 1916
Moser, Henry J.	Private	G, 40th U. S. V. Inf.	18	Indiana	52	15 00	Gastritis	Mar. 7, 1921

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA—Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Moyer, John A.	Corporal	C, 8th Tenn. Inf.	27	Tennessee	81	$50 00	Age	Mar. 11, 1921
Muller, Frederick	Private	Hosp. Corps, U. S. A.	12	New Jersey	50	24 00	Sciatica	Aug. 27, 1908
Mullen, James E.	Private	Hdqs. Det. 20th Engs.	22	Maryland	47		Malaria	Dec. 15, 1923
Muller, Fritz A.	Ord. Seaman	U. S. Navy	120	Germany	48	18 00	Rheumatism	Mar. 11, 1910
Mullins, William	Sergeant	L, 4th U. S. Inf.	42	Kentucky	56	24 00	Chronic bronchitis	July 8, 1921
Murbach, Albert	Sergeant	19th Co., U. S. Sig. Cor.	17	Wyoming	43		Neuritis	Apr. 3, 1917
Murphy, Arthur	Private	C, 1st Cal. V. Inf.	15	California	43	12 00	Fracture, right leg	Aug. 22, 1922
Murphy, John	Artificer	C, Pa. L. A.	5	Illinois	43	12 00	Rheumatism	June 3, 1911
Murphy, Patrick	Private	B, 2d U. S. Art.	53	Ireland	67		Rupture	May 20, 1913
Murray, George W.	2d Lieut.	K, 1st N. Y. Mtd. Rifles	38	New York	75	50 00	Age	July 14, 1917
Murray, Richard	Private	A, 12th U. S. Inf.	16	Maine	52		Ulcer on foot	Feb. 7, 1922
Myers, John T.	Private	I, 34th U. S. V. Inf.	20	Colorado	49	12 00	Piles	Dec. 7, 1923
Nagle, James	Private	A, 1st Cal. H. A.	16	California	50	12 00	Hernia	Jan. 9, 1923
Neal, Samuel R.	Fireman	U. S. Navy	36	Louisiana	56		Injury to head	Nov. 7, 1923
Neilan, Joseph	Private	H, 1st Cal. V. Inf.	16	Ireland	48	30 00	Lumbago	Feb. 4, 1909
Neukirch, Vinzenz	Sergeant	A, 1st U. S. Inf.	36	Germany	65	20 00	Age	Dec. 24, 1923
Nielsen, Rasmus (alias Charles Williams)	Private	M, 8th Cal. V. Inf.	7	Denmark	44	24 00	Lumbago	Oct. 3, 1901
Nelson, John	Private	I, 3d Mc. V. Inf.	14	Maine	73	50 00	Rheumatism	Oct. 13, 1915
Nelson, Peter A.	Drummer Boy	B, 19th Wis. Inf.	34	Norway	73	72 00	Age	June 23, 1922
Nepp, George W.	Private	I, 1st Cal. V. Inf.	18	Ohio	45	30 00	Loss, left arm	Nov. 5, 1920
Nesten, Charles	Corporal	D, 57th Ill. Inf.	45	Sweden	79	72 00	Age	June 11, 1923
Newell, George L.	Coxswain	U. S. Navy	122	New Jersey	46		Fractured leg	Mar. 20, 1924
Newell, Henry D.	Private	E, 6th Mass. V. Inf., etc.	28	New Jersey	41	24 00	Malaria	Nov. 16, 1917
Newton, James W.	Private	A, 100th N. Y. Inf., etc.	32	New York	43	50 00	Age	Apr. 18, 1890
Nice, John W.	Private	C, 25th Wis. Inf.	34	Illinois	75	72 00	Rheumatism	Sept. 6, 1920
Nichols, Alvin A.	Private	K, 2d Ark. Cav.	21	Alabama	81	50 00	Paralysis	Oct. 11, 1923
Nichols, Wilbur F.	Private	B, 34th Ill. Inf.	36	Illinois	62	50 00	Age	Jan. 20, 1904
Nigh, Theodore A.	Private	K, 143d Pa. Inf.	36	Pennsylvania	70	50 00	Rheumatism	July 14, 1914
Noonan, James J.	Private	A, 3d U. S. Engs.	9	Wash., D. C.	45		Kidney trouble	Mar. 29, 1922
Norman, Newton	Private	L, 16th Mo. Cav.	10	Missouri	72	50 00	Dysentery	Jan. 25, 1916
Noteman, Alexander	Private	F, 3d U. S. Cav., etc.	120	Ireland	75	20 00	Age	Feb. 25, 1924
Nugent, Lawrence H.	Coal passer	U. S. Navy	9	South Carolina	51	12 00	Rheumatism	Oct. 19, 1923
Nyblome, Carl	Musician	Band, 3d Ill. V. Inf.	8	Illinois	54	12 00	Fracture, left leg	May 21, 1923
O'Brien, James	Fireman	U. S. Navy	314	Ireland	58	60 00	Lame back	May 15, 1919
O'Conner, Michael	Corporal	K, 2d La. V. Inf.	8	Louisiana	43	15 00	Hypothropia liver	Feb. 4, 1912

O'Donnell, Patrick	Private	E, 9th Md. Inf.	10	Ireland	73	50 00	Age	Sept. 19, 1895
O'Goode, Charles A.	Private	E, 2d Cal. V. Inf., etc.	17	Ireland	67		Age	Mar. 12, 1924
O'Keefe, David P	Wagoner	F, 5th U. S. Cav., etc.	108	Ireland	50	12 00	Malaria	Oct. 5, 1921
Olen, Ziba B.	Private	A, 1st N. D. V. Inf.	17	Pennsylvania	71	30 00	Age	Apr. 15, 1924
Olesten, Harry A.	Ord. Seaman	U. S. Navy	32	California	35	60 00	Loss of both legs	Dec. 1, 1923
Olson, Charles J.	Corporal	Q. M. C., U. S. A., etc.	204	Wisconsin	49		Fracture, left arm	Feb. 7, 1924
Olger, George W.	Private	A, 38th Wis. Inf.	16	New York	71	50 00	Rheumatism	Oct. 21, 1915
O'Neil, Simon	Landsman	U. S. Navy	24	Ireland	79	50 00	Age	Aug. 27, 1919
Orvis, Orel D.	Private	D, 1st Wis. Cav.	34	Wisconsin	78	72 00	Age	May 10, 1924
Osterberg, John F.	Fireman	U. S. Navy	39	Sweden	69		Age	Dec. 13, 1915
Otis, Lewis S.	Musician	U. S. Navy	11	California	55	12 00	Rheumatism	June 19, 1924
Paine, Charles H.	Private	F, 1st Ore. Inf.	19	Illinois	72	50 00	Age	July 9, 1921
Partridge, Edward M.	Private	A, 3d Miss. V. Inf.	8	Michigan	52	18 00	Rheumatism	Nov. 24, 1922
Pascoe, William C.	Corporal	I, 1st Cal. Cav.	32	England	78	50 00	General debility	July 17, 1919
Pennington, Darius C.	Private	D, 11th Mich. Inf.	8	Michigan	74	50 00	Age	Feb. 19, 1923
Pennock, George H.	Private	G, 1st Ill. V. Cav., etc.	40	Canada	50		Rheumatism	Sept. 19, 1923
Penturf, Michael	Private	G, 9th Kans. Cav.	39	Missouri	51	72 00	Rheumatism	Aug. 9, 1896
Perkins, Daniel	Private	E, 12th U. S. Inf.	7	Massachusetts	50		Gastralgia	Feb. 21, 1924
Perry, Llewellyn O.	Private	B, 23d Me. Mil. Inf.	10	Maine	79	50 00	Age	Mar. 6, 1924
Peter, Simon	Sergeant	K, 98th Ohio Inf.	34	Ohio	69	50 00	Age	May 31, 1914
Peterson, Albert	Gunners Mate	U. S. Navy	57	California	42		Malaria	Jan. 25, 1924
Phelan, George W.	Private	L, 21st Kans. V. Inf.	7	New York	58	30 00	Lung trouble	Oct. 9, 1920
Phelan, John	Coal passer	U. S. Navy	14	Ireland	65	72 00	Sciatica	Mar. 21, 1909
Philipp, Otto	Private	K, 4th U. S. Cav.	21	Germany	59	18 00	Varicose veins	Feb. 19, 1924
Phillips, James N.	Corporal	K, 28th N. Y. Inf.	24	New York	79	50 00	Age	Apr. 9, 1923
Piatt, William C.	Private	H, 7th Ill. Cav.	24	Illinois	72	72 00	Age	Oct. 1, 1920
Pidge, William C.	Private	1st Batty. Wis. L. A.	36	New York	75	50 00	Age	Mar. 14, 1918
Piergentili, Nazzareno	Private	B, 37th Bn. U. S. Guards	8	Italy	34		Paralysis	Feb. 21, 1922
Pierpoint, Frank	1st Sergt.	U. S. Marine Corps	60	England	49	50 00	Loss of left foot	Sept. 10, 1913
Pierpont, John B.	Private	K, 10th Conn. Inf.	37	Canada	59	50 00	Partial paralysis	July 6, 1904
Pile, Oscar P.	Private	A, 6th Cal. V. Inf.	4	California	56	15 00	Chronic rheumatism	July 9, 1923
Pilger, John	Private	E, 9th Ohio Cav., etc.	36	Germany	58	50 00	Varicose veins	Oct. 24, 1902
Pollard, Walter W.	1st Sergt.	F, 3d N. J. V. Inf.	9	Maryland	57		Rheumatism	Feb. 4, 1924
Poole, Fred R.	Corporal	C, 1st Colo. V. Inf.	15	Missouri	48	15 00	Rheumatism	Feb. 3, 1923
Poor, John A.	Corporal	B, 5th Mass. Inf.	11	Massachusetts	81	72 00	Age	June 6, 1922
Pope, Edward E.	Private	H, 1st N. D. V. Inf.	16	New York	51	18 00	Bladder trouble	Feb. 6, 1922
Powell, Edward (known as Edward Powers)	Private	F, 98th Pa. Inf.	2½	Ireland	79		Rheumatism	May 6, 1922
Prade, Arthur H.	Private	I, 2d U. S. V. Cav.	5	Massachusetts	47	30 00	Hemorrhoids	May 2, 1921
Preston, Charles	Saddler	A, 1st Mich. Cav.	7	Michigan	79	50 00	Age	Apr. 28, 1924
Preston, Henry W.	Seaman	U. S. Navy	4	Michigan	50		Poor eyes	Nov. 9, 1920
Price, George J.	Private	A, Ore. L. A.	3	Ohio	55		Hernia	Dec. 21, 1920
Price, James H.	Nurse	U. S. Navy	30	Pennsylvania	53	72 00	Age	May 18, 1898

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Prior, Don	Private	L, 1st Cal. V. Inf.	17	California	41	18 00	Paralysis	Sept. 21, 1917
Pryor, Jeremiah	Private	C, 2d Cal. Inf.	12	Missouri	69	50 00	Rheumatism	Jan. 25, 1912
Putche, Bernard	Seaman	U. S. Navy	252	Germany	44	23 54	Nephritis	Jan. 14, 1909
Putnam, Charles G.	Private	B, 3d U. S. Art., etc.	36	Massachusetts	62	50 00	Rheumatism	Jan. 17, 1910
Putnam, Elias G.	Sergeant	H, 107th N. Y. Inf.	34	New York	82	50 00	Age	May 21, 1923
Quead, Orin	Private	L, 2d U. S. V. Cav.	6	Iowa	62	12 00	Age	Oct. 23, 1923
Radford, John C.	Private	E, 8th U. S. Inf.	16	Missouri	46	--------	Rheumatism	June 19, 1918
Ramford, William J.	Private	D, 1st Cal. H. A.	13	England	57	24 00	Injury to left leg	Aug. 9, 1922
Ralston, Milton	Private	D, 4th Ohio Cav.	8	Ohio	77	50 00	Age	July 13, 1923
Randall, George H.	Private	B, 1st Mass. H. A.	22	Massachusetts	58	50 00	Rheumatism	Oct. 13, 1901
Randall, Warren G.	Private	D, 1st Me. Cav.	19	Maine	58	50 00	Rheumatism	Sept. 30, 1904
Rankin, George W.	Private	B, 135th Ohio N. G. Inf.	8	Ohio	73	50 00	Age	Jan. 16, 1923
Ransom, Sidney	Seaman	U. S. Navy	37	Massachusetts	87	72 00	Age	June 6, 1924
Raubach, Conrad	Sergeant	F, 103d N. Y. Inf.	27	Prussia	73	50 00	Kidney disease	Dec. 6, 1912
Raun, Simon	Private	A, 16th U. S. Inf.	43	Germany	51	--------	Injury to foot	Sept. 22, 1922
Raymond, George N.	Private	D, 8th Cal. V. Inf.	7	Massachusetts	68	12 00	Age	Dec. 11, 1923
Rea, Frederic L.	Private	Hosp. Corps, U. S. A.	11	Illinois	59	15 00	Asthma	June 7, 1924
Reagan, Nicholas	Sergeant	C, 19th U. S. Inf., etc.	97	Canada	51	12 00	Chronic catarrh	Sept. 30, 1916
Reardon, John	Landsman	U. S. Navy	27	Missouri	52	50 00	Rheumatism	Nov. 23, 1895
Reay, Charles G.	Corporal	M, 1st Cal. V. Inf.	13	California	46	30 00	Nervous contraction	July 30, 1920
Rector, Solomon W.	Private	I, 2d U. S. V. Eng.	4	Missouri	51	10 00	Hernia	Oct. 23, 1920
Redmond, Michael	Private	H, 32d Mass. Inf.	36	Massachusetts	51	72 00	Rheumatism	Feb. 13, 1895
Regan, Thomas	Private	A, 1st Nev. Vol. Inf.	3	Illinois	55	--------	Nephritis	June 17, 1913
Reich, Frederick W.	1st Sergt.	K, 2d U. S. Cav.	60	Germany	62	20 00	Age	June 16, 1924
Reid, Thomas	Private	H, 27th U. S. Inf.	36	New Jersey	42	12 00	Fistula	Feb. 17, 1914
Reinville, Joseph	Private	F, 1st Ill. L. A.	29	Vermont	55	72 00	Partial blindness	Nov. 8, 1900
Reynolds, Floyd M.	Private	M, 43d U. S. V. Inf.	21	Virginia	52	18 00	Rheumatism	July 18, 1908
Reynolds Thomas	Private	C, 1st Cal. H. A., etc.	96	New York	50	12 00	Rheumatism	Dec. 15, 1911
Rhoda, William C.	Private	B, 144th Ill. Inf.	11	Illinois	75	50 00	Rheumatism	July 23, 1918
Rice, William H.	Private	B, 1st Cal. H. A.	6	California	43	15 00	Rheumatism	Dec. 21, 1911
Ries, Matthew G.	Private	F, 10th Ind. Inf.	36	Indiana	79	65 00	Age	July 10, 1923
Riley, Elias F.	Private	C, 7th Va. Inf.	4	Virginia	76	72 00	Rheumatism	Apr. 28, 1916
Risk, Robert	Private	C, 24th Mass. Inf.	36	Massachusetts	50	50 00	General debility	Mar. 20, 1894
Ripley, William H.	Private	E, 36th Ind. Inf.	36	Ohio	81	50 00	Age	May 21, 1923
Ritner, Walter C.	Chief Gun. Mate.	U. S. Navy	228	Pennsylvania	44	10 00	Injury to head	Jan. 21, 1924
Roberts, Harry E.	Private	E, 1st Wash. V. Inf., etc.	45	Iowa	45	17 00	Broken shoulder	Oct. 2, 1915

Roberts, Robert R.	Private	H, 19th Ind. Inf.	17	Pennsylvania	92	72 00	Age	May 9, 1924
Robertson, John S.	Private	H, 26th U. S. Inf.	36	Illinois	44	12 00	Flat feet	Apr. 16, 1924
Robinson, Charles H.	Captain	A, 8th U. S. Col. H. A., etc.	21	New York	87	50 00	Age	Sept. 1, 1921
Robinson, John M.	Maj. Surgeon	Staff, U. S. Vols.	34	Ohio	86	72 00	Age	July 3, 1922
Robinson, Joseph F.	Private	B, 1st Cal. V. Inf., etc.	29	Kentucky	56	15 00	Ulcer of rectum	Nov. 10, 1911
Rochford, Henry	Private	H, 12th U. S. Inf.	36	Ireland	70		Lumbago	Nov. 22, 1913
Rogers, William	Private	F, 2d Cal. Inf.	18	Massachusetts	66	50 00	Chronic gonetis	Nov. 9, 1915
Roggers, Edward F.	Seaman	U. S. Navy	271	Jamaica	70	37 00	Rheumatism	May 19, 1922
Rosen, James	Private	G, 2d U. S. V. Inf.	12	Russia	49	15 00	Rheumatism	Dec. 19, 1912
Ross, Charles M.	Private	B, 10th Ind. Cav., etc.	21	Indiana	45	72 00	Injury to right knee	Apr. 12, 1892
Roth, Charles	Private	D, 2d Ohio H. A.	24	Germany	88	50 00	Age	May 21, 1924
Roth, Conrad	Private	B, 3d U. S. Art., etc.	79	Germany	72	50 00	Age	Oct. 10, 1908
Rowan, John	Sergeant	D, 2d Tenn. Cav.	34	Tennessee	75	50 00	G. S. W., left leg	Aug. 13, 1917
Rowe, Albert	Musician	I, 53d Ind. V. V. Inf.	17	England	72	50 00	Age	June 15, 1922
Ruggles, Nathaniel T.	Private	C, 1st Cal. Cav.	35	Indiana	83	72 00	Age	May 29, 1923
Russell, John F.	Private	E, 6th Cal. V. Inf.	7	Alabama	61	15 00	Internal hemorrhoids	Aug. 5, 1921
Russell, George W. L.	Private	12th Co., U. S. S. Corps	4	Vermont	56	12 00	Chronic bronchitis	Feb. 7, 1924
Rutherford, Joseph	Private	C, 122d Ill. Inf.	35	Illinois	73	50 00	Age	Oct. 6, 1916
Rutter, Thomas H.	Farrier	M, 1st N. Y. Cav.	7	England	56	72 00	Age	Apr. 28, 1894
Ryder, Vaughan E.	Private	D, 7th U. S. Art., etc.	45	Canada	45	15 00	Broken ankle	Oct. 9, 1918
Saare, Alfred H.	Private	F, 3d Neb. V. Inf.	10	Wisconsin	51	30 00	Infected right toe	Nov. 2, 1922
Sage, Henry P.	Landsman	U. S. Navy	36	Connecticut	64	50 00	General debility	Aug. 1, 1913
Sage, Philo G.	Private	I, 4th Iowa Cav.	45	New York	82	50 00	Age	July 16, 1918
Salway, John E.	Corporal	F, 1st Cal. V. Inf.	15	England	55	12 00	Rheumatism	Nov. 16, 1923
Sanders, William	Private	H, 6th N. Y. Inf.	25	New York	53	50 00	Heart disease	June 15, 1894
Saunders, Julius P.	Sergeant	H, 17th U. S. Inf., etc.	227	Germany	65	20 00	Rheumatism	June 7, 1920
Sawyer, Charles A.	Private	D, 10th Vt. Inf.	35	Vermont	67	50 00	Rheumatism	June 15, 1911
Sawyer, Llewellyn	Private	A, 17th Mass. Inf.	5	Maine	67		General debility	Apr. 7, 1910
Scallen, Joseph M.	Private	B, 13th Minn. V. Inf.	11	Minnesota	48	12 00	Deformed foot	Mar. 7, 1923
Schenck, James P.	Cook	U. S. Navy	108	Illinois	63	30 00	Rheumatism	Apr. 9, 1919
Scheifly, John	Corporal	I, 2d U. S. V. Inf., etc.	34	Illinois	59	15 00	Rheumatism	Apr. 11, 1917
Schmidt, John C. (alias John Smith)	Private	G, 2d Cal. Inf.	36	Germany	76	50 00	Rheumatism	July 26, 1914
Schmitt, Paul	Seaman	U. S. Navy	82	France	56	12 00	Rheumatism	Dec. 9, 1920
Schmitz, William	Private	34th Co., C. A. C., U. S. A.	36	Wisconsin	40		Rheumatism	Sept. 7, 1920
Schneider, Carl	Private	F, 4th U. S. Cav.	36	Germany	49	30 00	Partial blindness	Feb. 1, 1914
Schneider, Jacob	Private	I, 3d N. Y. Inf.	7	Germany	72	72 00	Broken wrist	Feb. 8, 1919
Schultz, Frederick W.	Private	C, 1st Cal. V. Inf.	13	Iowa	60	18 00	Dysentery	Nov. 5, 1912
Schutz, Gottlob	Private	K, 3d U. S. V. Cav., etc.	22	Germany	45		Rheumatism	Jan. 6, 1921
Scott, Alfred I.	Private	C, 6th Cal. V. Inf.	4	Iowa	54	12 00	Umbilical hernia	Jan. 10, 1923
Scott, William	Private	B, 5th Conn. Inf., etc.	56	New York	74	50 00	Age	Mar. 16, 1921
Seaman, James S.	Private	C, 23d U. S. Inf.	36	Iowa	49		Rheumatism	Jan. 26, 1924
Searcy, William E.	Corporal	D, 2d Orc. V. Inf.	16	Kansas	36	18 00	G. S. W., buttock	Feb. 15, 1910
Seney, Edward J.	Private	K, 14th U. S. Inf., etc.	72	Illinois	48	12 00	Rheumatism	June 21, 1921

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA Continued.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Seymour, Harry C.	Q. M. Sergt.	37th U. S. V. Inf.	18	Canada	62	30 00	Rheumatism	Nov. 19, 1917
Shade, George W.	Private	B, 4th U. S. Art., etc.	96	Ohio	69	20 00	Broken hip	Dec. 10, 1918
Shafer, Albert	Private	C, 1st Mich. Cav.	19	Ohio	62	50 00	Heart disease	Mar. 25, 1909
Shaffer, William F.	Landsman	U. S. Navy	50	Pennsylvania	36		Chronic rheumatism	Sept. 9, 1910
Shanahan, Michael	Private	H, 34th U. S. V. Inf.	20	Michigan	61		Rheumatism	Jan. 23, 1922
Shannon, William H.	Private	15th Bty. Ind. L. A., etc.	34	Indiana	61	50 00	Age	Feb. 5, 1913
Sharkey, John J.	Private	I, 35th U. S. V. Inf.	21	California	62		Rheumatism	Dec. 13, 1919
Sharpe, Alexander	Private	3d Bty. Maine L. A.	8	Canada	77	50 00	Age	Oct. 8, 1923
Shattuck, George	Musician	L, 27th U. S. Inf.	36	New York	58	17 00	Diarrhoea	July 13, 1923
Shaw, Irvin J.	Corporal	H, 4th U. S. Cav., etc.	199	Washington	47		General debility	Apr. 24, 1924
Shaw, Oliver M.	Private	K, 59th Ill. Inf.	12	Illinois	65	50 00	Lame ankle	Jan. 3, 1911
Shaw, Wilson A.	Private	E, 8th U. S. Inf.	60	California	61	20 00	Rheumatism	Aug. 29, 1921
Shell, James	Private	Hosp. Corps, U. S. A.	36	New York	47		Rheumatism	Dec. 7, 1923
Sheridan, John	Private	B, 2d N. Y. Prov. Cav.	7	Ireland	68	50 00	Rheumatism	Jan. 5, 1912
Sherwood, Edmund	Corporal	Band, 7th U. S. Inf.	23	Pennsylvania	53	18 00	Hernia	Mar. 6, 1911
Shippey, John R.	Private	E, 11th Ind. Inf., etc.	39	New York	80	72 00	Blind	Feb. 14, 1922
Shockey, Charles	Private	H, 16th U. S. Inf.	8	Missouri	44		Lumbago	Jan. 21, 1924
Short, Frank J.	Private	M, 15th U. S. Inf.	36	New Jersey	42	14 00	Injury to right leg	Aug. 8, 1917
Shottenkirk, Chauncey F.	Corporal	I, 21st Ill. Inf.	25	New York	69	50 00	Age	Nov. 19, 1913
Shultz, Ebbon G.	Private	F, 13th U. S. Cav.	19	Kentucky	44	12 00	Bronchitis	Jan. 3, 1924
Simmons, Edward	Private	L, 1st U. S. Cav.	60	Virginia	63	20 00	Age	June 23, 1917
Simmons, John H.	Private	B, 29th U. S. V. Inf.	19	Indiana	40		Tuberculosis	Apr. 11, 1921
Simonds, Jesse	Private	I, 5th U. S. Inf., etc.	42	Pennsylvania	48	15 00	Rheumatism	Oct. 9, 1923
Sinclair, Benjamin	Musician	A, 21st U. S. Inf., etc.	180	West Virginia	73	20 00	Age	Feb. 17, 1923
Sinclair, Clarence	Corporal	U. S. Marine Corps	36	New York	46		Rheumatism	Oct. 21, 1921
Skelly, John	Private	G, 14th U. S. Inf.	24	New Jersey	66	20 00	Age	Aug. 17, 1916
Skeels, Spencer L.	Private	A, 150th Ohio Inf.	17	New York	65	50 00	Rheumatism	Jan. 5, 1910
Slade, Frank M.	1st Lieut.	C, 12th Ohio Inf.	39	Ohio	65	50 00	Hemorrhoids	Sept. 15, 1904
Slease, Jacob	Private	C, 139th Pa. Inf.	34	Pennsylvania	74	50 00	Age	Nov. 21, 1920
Smallwood, John W.	Private	12th Bty., U. S. F. A.	36	Indiana	54	18 00	Injury to right shoulder	Dec. 30, 1922
Smart, Charles O.	Private	B, Pa. L. A.	7	Pennsylvania	52		Rheumatism	Nov. 13, 1922
Smith, Anton	Private	L, 2d U. S. V. Engs.	11	Norway	58		General debility	June 20, 1921
Smith, Charles P.	Private	I, 3d N. Y. Inf., etc.	45	Vermont	76	50 00	Age	Dec. 9, 1920
Smith, Dewitt C. R.	Musician	Band, 111th Ill. Inf.	46	Indiana	68	50 00	Age	Dec. 11, 1916
Smith, Thomas E.	Landsman	U. S. Navy	11	New York	64		Rheumatism	Mar. 26, 1923
Smith, William	Private	A, 15th Pa. Cav.	15	New Hampshire	76	50 00	Age	May 16, 1922

Smith, William A.	Private	B, 38th Wis. Inf.	15	Germany	69	50 00	Heart disease	Aug. 5, 1914
Snow, George V.	Musician	E, 65th Ill. Inf.	36	Wisconsin	60	50 00	Age	Aug. 11, 1908
Sollman, August A.	Private	D, 1st Cal. V. Inf.	16	New York	59	15 00	Hernia	Dec. 29, 1923
Spaulding, Charles A.	Musician	G, 39th Mass. Inf.	44	Massachusetts	77	50 00	Age	Jan. 22, 1923
Spaulding, Dinwiddie W.	Private	B, 6th Cal. V. Inf.	5	California	61	30 00	Paralyzed, left side	May 19, 1922
Spaulding, John T.	Private	K, 1st Cal. V. Inf.	18	Wisconsin	67	30 00	Injury, right knee	Feb. 24, 1920
Spier, Adolphus G.	Seaman	U. S. Navy	8	Florida	54	--------	Rheumatism	Sept. 6, 1923
Spencer, Benjamin F.	Corporal	E, 9th Me. Inf.	46	Maine	80	72 00	Age	Jan. 7, 1922
Sprick, Henry	Private	E, 1st U. S. Cav.	60	Germany	62	20 00	Frozen feet	Dec. 5, 1914
Spurgeon, Felix	Private	F, 2d Ohio H. A.	24	Ohio	53	72 00	Rheumatism	Dec. 21, 1899
Squibb, Samuel	Private	F, 7th Ind. Cav.	31	Ohio	66	50 00	Rheumatism	Dec. 3, 1911
Stabler, John	Private	A, Ohio N. G. Cav.	2	Germany	82	--------	Defective vision	June 18 1914
Stahl, Fred	Private	F, 14th U. S. Inf., etc.	31	Pennsylvania	46	--------	Rheumatism	Oct. 10, 1921
Stammann, Charles	Private	A, 182d Ohio Inf.	11	Germany	64	50 00	Rheumatism	Mar. 20, 1897
Stanton, Edward	Private	U. S. Marine Corps	48	Ireland	50	50 00	Age	Aug. 28, 1894
Stanton, Frederick P.	Corporal	C, 5th U. S. Cav.	120	Pennsylvania	65	20 00	Age	Oct. 5, 1920
Steele, Henry C.	Private	D, 7th Iowa Inf.	17	Iowa	70	72 00	Bronchitis	June 7, 1914
Steffens, Diedrich T.	Private	C, 4th Wis. V. Inf., etc.	26	Germany	44	15 00	Rheumatism	Apr. 17, 1910
Stevens, Sim	Private	E, 20th Kans. V. Inf.	15	Missouri	48	30 00	Chronic bronchitis	Jan. 25, 1922
Stevens, Charles C.	Private	D, 6th Cal. V. Inf.	5	New Hampshire	59	12 00	Asthma	Mar. 14, 1923
Stevens, William A.	Private	H. C., U. S. A., etc.	39	California	47	--------	Gastritis	Mar. 22, 1924
Stevenson, John	Private	A, 153d N. Y. Inf.	11	Scotland	76	50 00	Age	Mar. 12, 1924
Stewart, John T.	Private	I, 49th Mo. Inf.	11	Kentucky	68	50 00	Rheumatism	Jan. 14, 1918
Stickoffer, Julius H.	Saddler	L, 8th U. S. Cav.	60	Switzerland	49	10 00	Heart disease	Feb. 17, 1895
Stolle, William	Private	3d Bty., N. J. L. A.	16	Prussia	52	50 00	Kidney disease	Sept. 24, 1892
Storm, Anton	Private	C, 19th U. S. Inf., etc.	75	Denmark	63	--------	Rheumatism	Sept. 20, 1921
Strafford, Thomas F.	Private	K, 42d U. S. V. Inf.	21	Massachusetts	52	--------	Rheumatism	Mar. 16, 1921
Strait, Hugh C.	Sergeant	F, 30th U. S. Inf.	24	Missouri	51	18 00	Nervous breakdown	Aug. 10, 1922
Stuart, Robert B.	Sergeant	B, 3d U. S. Cav.	60	New York	73	20 00	Age	June 4, 1924
Sullivan, Adrian A.	Musician	Band, 14th U. S. Inf.	73	Michigan	41	12 00	Rheumatism	Feb. 2, 1911
Sullivan, Jeremiah J.	Private	C, 121st N. Y. Inf.	3	Ireland	68	50 00	Rheumatism	Nov. 23, 1916
Sullivan, John	Musician	H, 13th U. S. Inf., etc.	80	Massachusetts	66	--------	Age	Nov. 10, 1923
Sullivan, Patrick	Private	B, 1st U. S. V. Engs.	6	Vermont	56	12 00	Rheumatism	Jan. 22, 1921
Sutherland, Demoitte W.	Private	A, 8th Ill. Inf.	13	Illinois	63	50 00	Lead poisoning	May 24, 1911
Sutton, Jesse A.	Private	I, 1st N. C. Inf., etc.	46	South Carolina	52	12 00	Rheumatism	Jan. 11, 1924
Talbot, John	Private	L, 2d U. S. V. Engs.	11	England	60	24 00	Rheumatism	Nov. 2, 1912
Tanner, Elijah	Private	F, 174th Ohio Inf.	10	Ohio	64	50 00	Rheumatism	Jan. 1, 1911
Taormina, Santo	Private	D, 61st U. S. Inf.	19	Italy	39	--------	Rheumatism	Oct. 8, 1923
Tatcburg, Ernest W.	Sergeant	I, 39th Ill. Inf., etc.	50	Germany	79	50 00	Age	Nov. 17, 1911
Taylor, Samuel W.	Private	E, 5th Me. Inf.	37	Maine	69	50 00	General debility	Oct. 12, 1913
Tayler, Thomas H.	Private	G, 17th Mass. Inf.	48	England	54	72 00	Rheumatism	July 4, 1894
Taylor, William H. H.	Private	K, 6th Cal. Inf.	14	Indiana	58	50 00	Heart trouble	May 15, 1905
Tennant, Frank T.	Corporal	F, 1st Ill. Cav.	6	New York	61	12 00	Lumbago	Dec. 13, 1920
Thomas, George H.	Private	C, 2d Ill. V. Inf.	12	Kentucky	49	30 00	Partial paralysis	Nov. 13, 1918

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA—Continued.

Name	Ran,	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Thomas, Lewis	Private	M, 1st Ind. H. A.	28	Missouri	58	$50 00	Rheumatism	Jan. 22, 1904
Thompson, Ralph A.	Private	I, 6th Kans. Cav.	14	Canada	73	50 00	Age	July 7, 1921
Thompson, William W.	Wagoner	H, 12th Minn. V. Inf.	5	Michigan	42	30 00	Hernia	Dec. 7, 1913
Thorp, John B.	Private	B, 2d Cal. Inf.	17	Texas	72	72 00	Age	Sept. 22, 1918
Thurston, George	Private	H, 86th Ill. Inf.	28	Indiana	65	50 00	Rupture	Feb. 10, 1910
Timm, Richard	Private	A, 3d U. S. Art.	10	Germany	49	15 00	Nervous trouble	Apr. 13, 1915
Tompkins, Walter T.	Private	71st Co., C. A. C., U. S. A.	36	California	50	12 00	Rheumatism	Apr. 18, 1921
Townsend, Ross	Master at Arms	U. S. Navy	37	California	52		Defective left leg	May 28, 1915
Trembly, Cyprian	Private	I, 20th Kans. Inf.	20	Canada	63	50 00	Lame shoulder	Feb. 10, 1910
Tremper, Edgar	Corporal	K, 2d Wis. Inf.	47	New York	69	50 00	Rupture	Mar. 22, 1912
Trengove, William J.	Private	H, 63d U. S. Inf.	22	California	31		Paralysis, left hand	May 26, 1924
True, Charles S. (alias Chas. T. Shaw)	Landsman	U. S. Navy	14	Maine	71	50 00	Partial blindness	Sept. 13, 1918
Tuck, John W.	Private	G, 28th Ill. Inf.	39	Maine	65	50 00	Partial paralysis	Sept. 27, 1910
Tucker, William B.	Private	H, 64th Ohio V. Inf.	8	Ohio	73	72 00	Age	Feb. 15, 1915
Turner, John H.	Mechanic	A, 159th U. S. Inf.	20	California	41		Rheumatism	May 1, 1924
Tussce, William	Private	F, 50th Mo. Inf.	12	Missouri	66	50 00	Partial paralysis	July 16, 1911
Tuttle, Smith P.	Sergeant	F, 1st Neb. Cav.	53	Illinois	81	50 00	Age	June 21, 1923
Tyson, Robert A.	Private	F, 47th Ind. Inf., etc.	50	Pennsylvania	81	50 00	Age	July 6, 1921
Ullman, John	Private	C, 8th Kans. Inf.	22	Germany	60	50 00	Kidney trouble	May 3, 1901
Umland, Gustav A. (alias Amandus A. Umland)	Fireman	U. S. Navy	120	California	55	12 00	Cardiac trouble	Aug. 9, 1923
Ursenbach, Louis F.	Corporal	Band, 3d U. S. Art., etc.	151	Switzerland	35	24 00	Bronchitis	Dec. 12, 1901
Valpey, Charles C.	Private	E, 2d Cal. Cav.	20	Nova Scotia	66	50 00	Age	May 15, 1913
Vandaveer, William	Private	E, 7th Cal. V. Inf.	6	Illinois	49		Lumbago	Aug. 27, 1911
Van Iderstine, William H.	Private	D, 13th N. J. Inf.	29	New Jersey	76	60 00	Age	Nov. 8, 1920
Vannier, Henry M.	Private	D, 1st N. D. V. Inf.	18	Iowa	54	12 00	Asthma	Apr. 18, 1924
Veliz, David E.	Musician	U. S. Navy	228	Chili	49	47 86	Rheumatism	June 22, 1918
Victor, Daniel	Private	A, 30th U. S. Inf.	3	Massachusetts	49		Gastralgia	Nov. 13, 1923
Vining, Croney	Private	H, 6th Ohio V. Inf., etc.	33	Ohio	42	24 00	Knee trouble	Jan. 5, 1921
Vogler, Remigius	Private	I, 41st N. Y. Inf.	24	Switzerland	65	50 00	Rheumatism	Dec. 31, 1909
Von Needa, David L.	Corporal	K, 28th U. S. V. Inf.	19	Pennsylvania	60	18 00	Hernia	June 24, 1924
Voss, Charles T.	Private	E, 8th U. S. Inf.	36	New York	48	12 00	Neuritis	May 1, 1922
Wadding, William	Private	F, 6th Cal. V. Inf.	6	Ireland	54		Rheumatism	Nov. 29, 1923
Walker, James H.	Boiler maker	U. S. Navy	100	Nebraska	46		Ataxia	Feb. 5, 1924
Walker, Lester E.	Sergeant	F, 4th U. S. Art.	60	New York	70	20 00	Age	Jan. 24, 1921

Walker, William B.	Corporal	H, 3d U. S. Art.	60	Georgia	49		Myocarditis	Jan. 29, 1913
Wall, Michael A.	Private	D, 3d Miss. V. Inf., etc.	42	Illinois	52	12 00	Stomach trouble	Mar. 8, 1924
Wallin, William	Private	Henshaws Bty., Ill. L. A.	33	Illinois	73	50 00	Age	Oct. 22, 1917
Wallenburg, Ossian J.	Private	Hosp. Corps, U. S. A.	10	Sweden	53	15 00	Rupture	Nov. 15, 1921
Wangler, Anton	Private	B, 43d Ill. Inf.	36	Germany	76	50 00	Atrophoid leg	Dec. 5, 1914
Ward, Charles H.	Private	C, 1st Cal. H. A.	7	California	38	12 00	Rheumatism	Mar. 27, 1912
Warren, Julian B.	Private	B, 1st Cal. H. A.	7	California	36	15 00	Partial deafness	May 12, 1916
Warwick, Guy	Musician	H, 2d U. S. Art.	36	Ireland	72		Heart trouble	Apr. 6, 1920
Wassam, Charles L.	Private	E, 28th U. S. Inf.	36	Ohio	43		Injury to spine	Mar. 13, 1923
Watt, Joseph A.	Private	F, 14th Pa. Cav., etc.	25	Pennsylvania	54	50 00	Fractured ankle	May 17, 1899
Waymack, James T.	Private	H, 1st U. S. Cav.	21	Virginia	66	20 00	Age	Apr. 30, 1923
Weiman, Joseph F.	Private	C, 72d Ill. Inf.	20	Germany	69	50 00	Age	Sept. 30, 1916
Weisker, Conrad	Private	K, 3d N. Y. Prov. Cav.	8	Germany	80	50 00	Age	Feb. 19, 1924
Wells, William H.	Private	B, 8th Cal. V. Inf.	7	California	38	12 00	Failing sight	Sept. 19, 1912
Wentzell, Ellsworth	Private	E, 23d U. S. Inf.	36	New Jersey	60	12 00	Rheumatism	Jan. 6, 1923
Werly, Charles	Private	Ordnance Dept., U. S. A.	36	Switzerland	53		Heart trouble	Oct. 8, 1912
Wescott, Harrison	Private	I, 7th Me. Inf.	30	Maine	73	50 00	Age	Mar. 28, 1916
Weston, John N.	Corporal	F, 1st Pa. V. Inf., etc.	24	Pennsylvania	53	12 00	Fractured arm	Dec. 7, 1923
Wetsell, George W.	Drummer	U. S. Navy	66	New York	57	50 00	Bronchitis	Nov. 30, 1902
Weykman, Peter	Corporal	G, 12th U. S. Inf.	36	Holland	50	30 00	Myocarditis	Sept. 21, 1912
Whalen, John C.	Private	C, 3d U. S. Cav., etc.	77	Massachusetts	43		General breakdown	Nov. 23, 1920
Whipple, Matthew T.	2d Lieut.	K, 167th Ohio Inf.	4	Ohio	84	50 00	Age	Aug. 21, 1923
Whisler, Abraham	Private	K, 12th Ohio Inf.	50	Ohio	74	50 00	Age	May 15, 1915
White, Robert N.	Private	H, 8th Mo. Cav.	20	Missouri	73	50 00	Age	Jan. 4, 1921
White, Simon	Private	B, 5th U. S. Inf.	26	Michigan	42	30 00	Tuberculosis	Jan. 22, 1918
White, Thomas F.	Private	D, 1st Nev. V. Inf.	3	Massachusetts	50	15 00	Injury to left arm	Sept. 16, 1908
Whitlock, William H. H.	Corporal	F, 7th Cal. Inf.	16	Michigan	73	50 00	Rupture	Mar. 11, 1914
Whitney, Isaac	Private	M, 14th N. Y. H. A., etc.	33	New York	73	50 00	Age	Oct. 29, 1910
Whittier, Marcellus	Private	A, 2d Cal. Cav.	12	Maine	69	50 00	Rheumatism	Jan. 3, 1917
Widten, Charles	Seaman	U. S. Navy	97	Massachusetts	68	50 00	Rheumatism	Nov. 17, 1905
Wilbur, Julian E.	Private	I, 46th U. S. V. Inf.	20	Nebraska	53	30 00	Stomach trouble	May 29, 1922
Wilcox, Charles	Private	I, 64th Ill. Inf.	16	Illinois	73	72 00	Age	Oct. 1, 1921
Wilkens, William L.	Private	B, 4th Va. V. Inf.	8	Virginia	48	30 00	Neurosis	Aug. 15, 1922
Wilkes, Blair	Private	I, 184th Ohio Inf.	7	Ohio	65	50 00	Rheumatism	Apr. 5, 1911
Willcox, William H.	Captain	D, 95th N. Y. Inf.	16	New York	90		Age	July 29, 1922
Willey, Alden B.	Sergeant	I, 13th Me. Inf.	38	Maine	82	50 00	Age	Aug. 10, 1923
Williams, Edward	Private	U. S. Marine Corps	41	Ohio	42	12 00	Fracture, right ankle	Feb. 3, 1908
Williams, Edward	Private	F, 33d Ill. Inf.	8	Illinois	63	50 00	Rheumatism	Sept. 29, 1909
Williams, John H.	Private	F, 4th U. S. Inf.	36	Massachusetts	53	12 00	Kidney trouble	Feb. 1, 1921
Williams, Matthew S.	Q. M. Sergt.	M, 5th Mo. V. Inf.	18	Missouri	48	30 00	Rheumatism	June 20, 1915
Williams, Walter J.	Shipwright	U. S. Navy	36	California	48	12 00	Hernia	Feb. 1, 1923
Wilson, Edward F.	Bn. Sgt. Major	22d U. S. Inf.	36	Massachusetts	63	18 00	Nervous breakdown	Nov. 26, 1920
Wilson, Hiram C.	Corporal	F, 18th Mo. Inf.	45	Missouri	70	50 00	G. S. W., right leg	Mar. 13, 1913
Wilson, James H.	Act. Hosp. Stwd.	Hosp. Corps, U. S. A.	8	Ohio	54	12 00	Chronic otitis	May 29, 1918

DESCRIPTIVE LIST OF THE MEMBERS OF THE VETERANS' HOME OF CALIFORNIA—Concluded.

Name	Rank	Company and Regiment	Length service, months	Nativity	Age when admitted	Pension per month	Disability	When admitted
Winrick, Louis H	Private	L, 1st U. S. Cav	48	Wisconsin	36	$8 00	Fractured leg	Dec. 13, 1923
Wolff, Alfred R. H	Apothecary	U. S. Navy	49	Iowa	65		Age	Mar. 18, 1924
Wolter, George	Private	U. S. Marine Corps	10	Utah	30		Gastralgia	July 5, 1921
Wood, Theodore G	Private	K, 32d Wis. Inf	34	New York	79	50 00	Age	July 29, 1923
Woodard, James F	Private	M, 1st Colo. Cav	37	Missouri	76	50 00	Age	Oct. 4, 1916
Woodard, William	Private	A, 4th Va. V. Inf	12	Virginia	48	15 00	Defective vision	Dec. 3, 1910
Wooden, Cassius C	Private	B, 11th U. S. Inf	22	Indiana	42		Hemorrhoids	Dec. 27, 1920
Woodward, Howard B	Private	A, 22d Ill. Inf., etc	39	Wisconsin	66	50 00	Loss left leg	Aug. 11, 1911
Woodward, Walter M	Private	F, 1st Tenn. Mtd. Inf	14	Tennessee	69	50 00	Rheumatism	May 22, 1916
Wooley, George S	Private	C, 4th Wis. V. Inf	6	Wisconsin	57		Rheumatism	Feb. 20, 1924
Wright, Benjamin F	Private	D, 45th Iowa Inf	4	Indiana	73	50 00	General debility	June 18, 1918
Wortman, Isaac	Sergeant	B, 35th Mass. Inf	34	Massachusetts	76	50 00	Age	Sept. 15, 1921
Writer, Orion E	Private	I, 57th Mass. Inf	37	Vermont	52	50 00	Kidney disease	Sept. 14, 1896
Yarrington, Thomas A	Private	H, 3d U. S. Art	14	Wisconsin	47		Rheumatism	Mar. 17, 1916
Yeatman, Paxton G	1st Cl. Private	F, 3d U. S. V. Engs	12	Virginia	65		Age	Oct. 28, 1922
Yohn, James	Private	H, 133d Pa. Inf., etc	29	Pennsylvania	77	50 00	Age	Dec. 9, 1920
Young, George S	Private	B, 1st Cal. H. A	7	Nevada	46	15 00	Sciatica	Dec. 12, 1923
Young, Frank W	Private	M. G. Co., 18th U. S. Inf	36	California	39		Paralysis	May 6, 1924
Young, Henry F	Corporal	H, 1st Cal. V. Inf	17	California	51		Wood alcohol poisoning	Sept. 22, 1920
Younger, Elton R	Q. M. Sergt	L, 36th U. S. V. Inf., etc.	19	California	52		Chronic dysentery	Aug. 24, 1908
Zeller, William	Corporal	H, 1st Mont. V. Inf	31	Germany	51	18 00	Malaria	Dec. 2, 1918
Zerby, Jacob	Private	D, 46th Ill. Inf	24	Illinois	47	50 00	Rheumatism	July 14, 1896
Zipfel, Joseph R	Water tender	U. S. Navy	30	Ohio	57	6 00	Age	Aug. 17, 1912
Zullig, Hugo	Private	D, 1st N. D. V. Inf	12	Switzerland	38		Piles	Oct. 15, 1910

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BIENNIAL REPORT

OF THE

Board of State Harbor Commissioners

FOR THE

Fiscal Years Commencing July 1, 1922, and Ending June 30, 1924

COMMISSIONERS:

CHAS. H. SPEAR, *President*

J. B. SANFORD M. F. COCHRANE

CALIFORNIA STATE PRINTING OFFICE
FRANK J. SMITH, Superintendent
SACRAMENTO, 1924

35341

BOARD OF STATE HARBOR COMMISSIONERS.

CHAS. H. SPEAR ..... *President*
J. B. SANFORD ..... *Commissioner*
M. F. COCHRANE ..... *Commissioner*

OFFICERS.

J. L. PHELPS ..... Secretary
JAS. BYRNE, JR. ..... Assistant Secretary
FRANK G. WHITE ..... Chief Engineer
H. E. SQUIRE ..... Assistant Engineer
FRED S. KNIGHT ..... Chief Wharfinger
T. J. MCGINTY ..... Superintendent Belt Railroad
WM. T. PLUNKETT ..... Attorney

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LETTER OF TRANSMITTAL.

To His Excellency, Hon. Friend Wm. Richardson,
Governor of the State of California.

Dear Sir: The Board of State Harbor Commissioners herewith submits its biennial report for the fiscal years commencing July 1, 1922, and ending June 30, 1924, with complete statements showing all moneys by them received and disbursed, stating specifically for what the same was received and for what purpose expended; also, a concise account of all improvements made and the general condition of the property under charge of the Commission.

Very respectfully.

Chas H. Spear, *President,*
J. B. Sanford,
M. F. Cochrane,
Board of State Harbor Commissioners.

October 30, 1924.

The "Shenandoah" Dipping Easterly Over San Francisco October 20, 1924, on Return Course to the East. Black Dots Above the Dirigible are Army Escorting Airplanes. Southern Pacific Building in Left Foreground.

THE PORT OF SAN FRANCISCO.

Californians have built up in San Francisco Bay the largest and best harbor in the world from revenues in commercial operations without taxation of the public through a period of sixty years, dating from the creation of the Board of State Harbor Commissioners in 1863. The state properties thus accumulated have an appraised value of $50,000,000 and that valuation is increasing with further development of the harbor.

This great state-owned property, extending from the United States military reservation on the north to the boundary line between San Francisco and San Mateo County, a distance of about ten miles of waterfront, of which about one-half is improved, is in the control of the Board of State Harbor Commissioners, a state business agency of three members appointed by the Governor.

"The Port of San Francisco may be described as the port that has found itself," a noted writer says, "and as such it is unique among the ports of all the world.

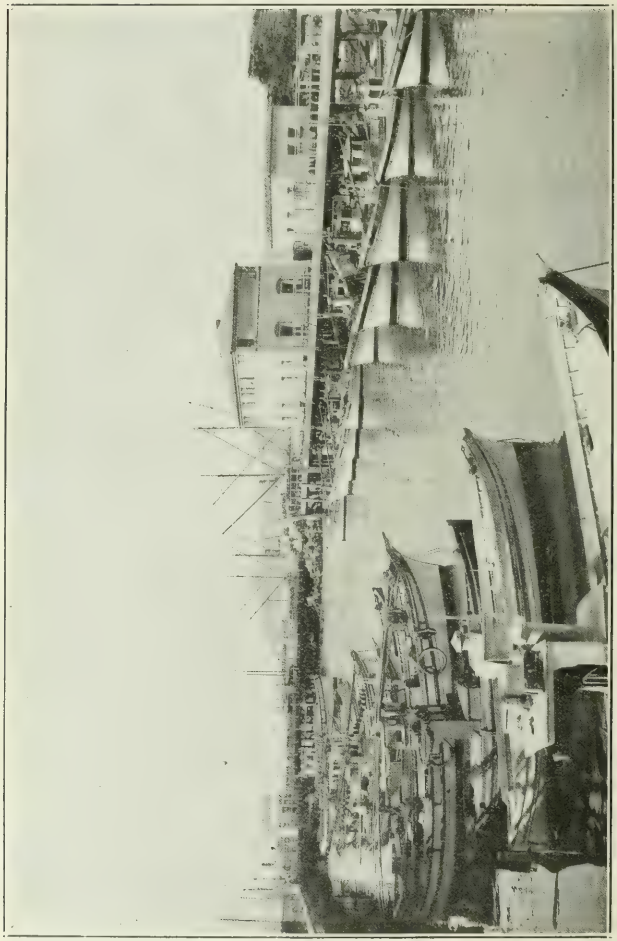
"The developments of the waterfront itself, The Embarcadero, the seawall and piers, the Belt Railroad and the seawall lots, could not have been carried out under private or municipal auspices in the manner so beneficial, so efficient, and so economical withal as is now apparent."

The jurisdiction of the Board of State Harbor Commissioners covers all state properties on the waterfront and extends easterly to the pier-head line. The Embarcadero, or waterfront street, is state property and under the control of the Harbor Commission.

Chief Engineer Arnold, in report to the Board in 1873, made the statement that the area of the Bay of San Francisco reckoned to the line of high water, without measuring San Pablo and Suisun bays, is 257 square miles, of which 79 square miles are within the three-fathom contour line and navigable for large sea-going vessels. The anchorage basin proper, within city lines, embraces 59 square miles. He gave the width of the Golden Gate as nine-tenths of a mile and water depth on the bar at low tide, 33 feet. It is significant that at this date, fifty-one years later, the bar conditions are improved, showing no shoaling from river carried silt. The shallowest bar channel today is 37 feet at low water. The north channel is always 54 feet in depth and 2000 feet in width.

Later surveys give the harbor area as 420 square miles, the shore line 350 miles and San Francisco Bay alone, a shore line of 100 miles with a depth of water at pier-head line 40 to 60 feet.

In 1923 the War Department of the United States, acting through the Corps of Engineers in the First California District, and operating under federal authorization for improvement of bar conditions, brought here the great ocean dredge "Culebra," which was used with wonderful success in building the Panama Canal, and started work on the San Francisco bar project. This giant dredge worked here intermittently from January to the latter part of May, 1924, when she was transferred for emergency work in Gray's Harbor, and was returned to San



Fisherman's Cove at North Beach Where 200 Fishermen's Boats Land Every Day.

Francisco in October, 1924, to continue the planned work on the outer bar. Before the "Culebra" was employed on the bar the uniform depth of low water in 1924 was 35 feet.

Colonel Herbert Deakyne, U. S. Corps of Engineers, in charge of the harbor work, is authority for this interesting statement of San Francisco harbor conditions in October, 1924:

> The project for the San Francisco Outer Bar provides for a channel following the line of the Main Ship Channel with the Fort Point and Alcatraz lighthouses as the centre line-sailing range, 2000 feet wide and 40 feet deep at mean lower low water.
>
> The present project is about 13 per cent completed on this date (October 30, 1924). The total estimated cost of the work including the cost of the dredge, is $1,000,000. Annual maintenance is estimated at $100,000. If funds are made available, it is expected to complete the project channel by June 30, 1926. The last survey of the channel was made in May, 1924, when the controlling depth was found to be 37 feet at mean lower low water.
>
> The Bonita, or North Channel, has a controlling depth of 54 feet at mean lower low water and a minimum navigable width at that depth of 730 feet abreast of Centissima Rock. At 40 feet depth there is a minimum width of 2000 feet at Sears Rocks, and a maximum width of about 4000 feet near Tennessee Point.

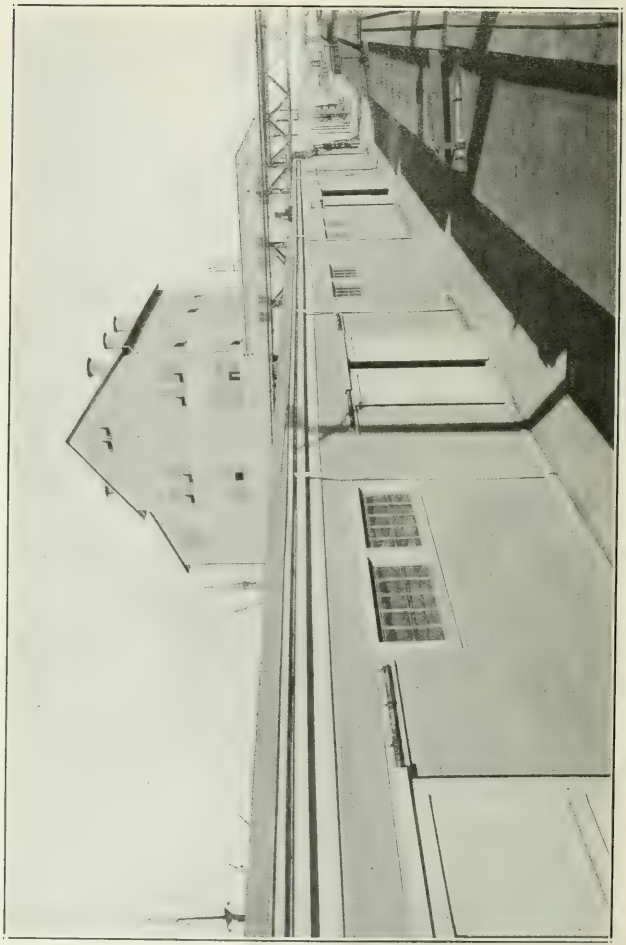
The improved waterfront assigned to commercial uses is five miles in length. There are 15 miles of berthing space and 5,000,000 feet of cargo area. There is at present berth space for 250 average-size vessels. When commerce demands larger shipping space waterfront development can be extended to 50 miles of piers and bulkhead landings.

There are now in service on the waterfront 15,000 feet of completed seawall, 41 piers, some of them extended during the year, new bulkheads and smaller open wharves rebuilt, 28 seawall lots of land having an area of 5,000,000 square feet and the tract of 25 acres leased to The Atchison, Topeka and Santa Fe Railway Company for its terminal on China Basin. The state also owns 280 acres of submerged lands on Islais Channel, part of it partially reclaimed and in commercial use and another section to be reclaimed immediately for commerce.

The Belt Railroad with trackage of 58.35 miles connecting three transcontinental lines with the piers and more than 100 industrial plants on the waterfront is owned by the state and operated by the Harbor Commission to the satisfaction of all shipping and industrial interests.

The Harbor Improvement Fund is a separate fund in the State Treasury, into which all moneys received by the Board of State Harbor Commissioners are paid and from which costs of operations and improvements, interest and bond redemptions are paid. Monthly statements of harbor receipts of every nature are made to the State Treasurer and the moneys are transmitted to the Treasurer at the end of each month. Moneys received from sales of bonds are maintained in separate funds.

Complete statements of all transactions of the Board are included in the financial report herein, to which reference is made for particulars. It will be seen therein that the total receipts of the Board of State Harbor Commissioners for the fiscal year June 30, 1923, to July 1, 1924, were $2,786,512.11. The expenditures were $1,168,283.46, the surplus for the year being $1,618,228.65. Receipts for 1923 were $2,687,895.99 and for 1924, $2,786,512.11. The gain in operative revenue in 1924 was $98,616.12.



Islais Grain Terminal, Five Stories in Height and Having Capacity for Handling 600 Tons of Grain Daily, the Business Paying $25,000 Annually to the State.

REPORT OF BOARD OF STATE HARBOR COMMISSIONERS.

The biennial report of the Board of State Harbor Commissioners for 1923–24 covers the administration of two boards, changes having been made at the close of the first fiscal year of the biennium. The present Board of State Harbor Commissioners consists of the following named Commissioners: Chas. H. Spear, appointed vice John H. McCallum, May 21, 1923, and elected president May 24, 1923; J. B. Sanford, appointed May 24, 1923, vice F. S. Moody, resigned; M. F. Cochrane, appointed August 1, 1923, vice Harry H. Cosgriff, resigned.

Outstanding achievements of the new Board of State Harbor Commissioners in 1923 and 1924 were construction of the only vehicular subway on the Pacific coast to relieve congestion of the great passenger traffic through the Ferry Building; completing erection and starting successful operation of the Islais Creek grain terminal; rebuilding The Embarcadero with up-to-date, smooth pavement; reconstruction work on the Belt Railroad; extending piers; making extensive repairs throughout the waterfront; renovations and remodeling in the Ferry Building to make it the most attractive single depot in the United States; ordering construction of modern piers at a cost of about $2,000,000, and successfully managing a commercial shipping business that has outgrown the port.

The Board has made a record for economy and efficiency in its management of the port, meeting requirements of growing commerce so far as pier accommodations now provide and giving service to shipping interests handling larger business than in any other year in history. In the state budget, carefully prepared for the first year of Governor Friend Wm. Richardson's administration, an estimate of $1,626,982.88 was made for expenditures by the Board of State Harbor Commissioners for salaries and support. The Board's financial statement for the period shows that these expenditures amounted to $1,405,608.58, leaving a balance of $221,374.30 remaining June 30, 1924.

NO COST TO TAXPAYERS.

This biennial report covers in general the operations of the former board and gives in detail the accomplishments of the succeeding board during the second year of the biennium. It was shown in the biennial report 1920–22 that the control of the port had been profitable, in keeping with the record made through the past sixty years, with a substantial increase credited to the state management and adding large values to the tangible assets of the harbor, now appraised at $50,000,000, of which taxpayers have not been asked to pay one dollar. It was stated in the 1920–22 biennial report that the surplus revenue above operating expense, cost of repairs and replacements, interest and sinking fund on bonds, etc., was $665,782.07 for the fiscal year ending June 30, 1921, and $580,818.03 for the year ending June 30, 1922, a total of $1,246,600.10 for the biennium.

In the financial statement for the two fiscal years ending, June 30, 1923, and June 30, 1924, presented in this report, it is shown that a surplus over fixed operating charges remains from operations for the year ended June 30, 1924, in amount $1,044,707.39 as compared with the year ended June 30, 1923, of $867,562.37, a gain of $177,145.02 in the fiscal year and an increase of $463,889.36 over the preceding year ending June 30, 1922. In the three fiscal years the increase in surplus revenues amounted to $2,493,087.79. All of this surplus money goes back into extraordinary maintenance and capital improvements.

All sources of revenue during the fiscal year 1923–24 just passed, show increases while operating expenses decreased $38,349 as compared with expenses for the previous year. There was expended during the last fiscal year $869,039.09 for new property and equipment, the values to be added to the tangible assets of the state. Of this amount $430,396.88 was expended from revenue earned, and $438,642.21 was taken from the Third San Francisco Seawall Fund.

Throughout the extensive harbor properties of the state under management of the State Board of Harbor Commissioners there was found need for many repairs and replacements along the waterfront. Early inspection directed by the Board in June, 1923, disclosed considerable decay in timber and disintegration in exposed materials. Piers were noticeably weakening by dry rot and building exteriors were weather worn. The handsome Ferry Building, resting on a concrete foundation supported by 5000 piles, showed less settlement than private properties on reclaimed ground, but it had not been properly taken care of, experts found. The facings had not been painted for several years and the appearance was not creditable to the state. Plans were immediately made for resurfacing the California stone front of the building, for repainting the interior and for laying marble flooring in the waiting rooms of the railroad systems housed in the great stone depot. During the year these improvements were made at a cost of $63,760, of which new marble flooring in the waiting rooms cost $31,000. California white marble from quarries in Tuolumne County was laid in rich concrete resting on ancient dark concrete floors and the whole interior was repainted white, completely changing the depot from a dark, depressing color to a pure white interior and making the waiting rooms inviting places in soft, restful lighting effect. The transformation was delightful to the fifty millions of passengers who passed through the Ferry Building in 1924, and most creditable to the Harbor Commissioners, pleased East Bay commuters declared.

REPAIRS AND REBUILDING NECESSARY.

Following a carefully planned program for making neessary repairs and rebuilding, the Board had surveys made of all substructures and superstructures along the waterfront. Expert heads of pile driving and wharf construction and general repairs reported, after personal inspection of conditions, that $235,000 would be required to bring the properties up to first-class condition. This report was approved by the chief engineer who held that the appraisal was fair for the work but no estimate could be made of probable defects to be found in making the repairs contemplated, as experience in two instances had increased such estimated costs seventy-five per cent. Dry rot in timber supports was

found in all directions, and the experts reported that the waterfront was full of it, caused largely by bad construction. All this had to be replaced and the Board's employees were instructed to do all work in first-class manner to make repairs as near permanent as possible. As the repair work progressed, big timbers were found rotten in many sections. The cost of repairs in that direction during the first year of this Board's administration and the maintenance costs for the current fiscal year, totaled $500,584.73. Repairs and maintenance charges for the year ended June 30, 1923, were $521,267.57, an outlay $20,682.84 in excess of the reconstruction and repair charges made necessary in 1924 as far as the work could be carried along to the end of the fiscal year. Costs of building and equipping another piledriver, now under contract, as an emergency addition will be an expense chargeable in the next fiscal year.

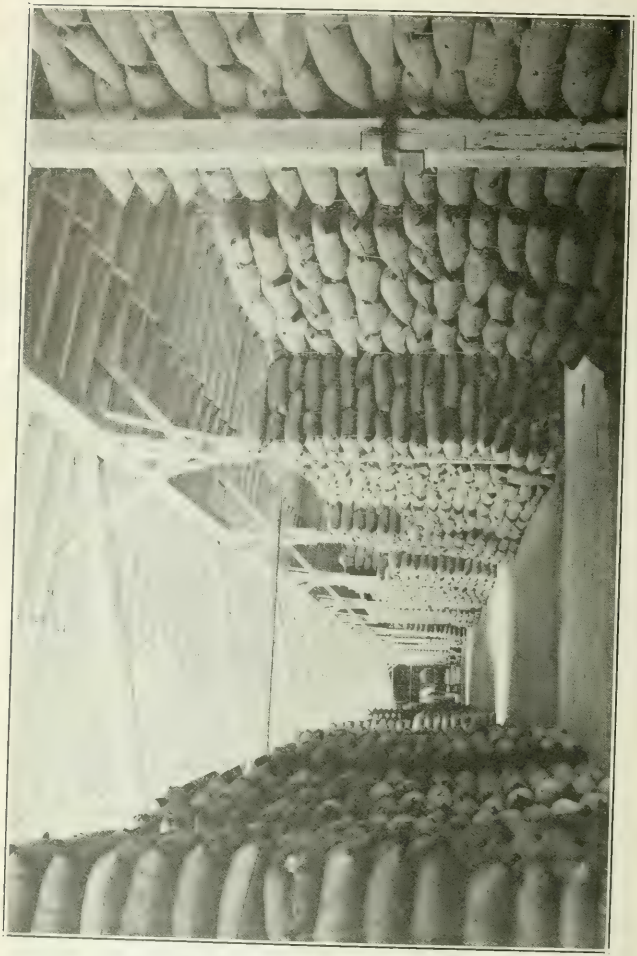
IMPROVEMENTS CALLED FOR BOND MONEY.

This Board expended during the fiscal year just closed $430,000 for wharf extensions and other necessary building improvements from surplus revenues available, but larger betterments could not be provided for unless bonds could be sold. There was available in the authorized state bond issue of 1913, a balance of $7,000,000, and Governor Richardson assented to the Board's recommendation to sell $2,000,000 of the reserved bond issue, which will be used to build new piers and reclaim a large section of waterfront land on the southern extension of the waterfront along Islais Creek where the state owns 280 acres of submerged lands which will in time be used for commercial activities. The future growth of the waterfront must necessarily be along Islais Channel and it is planned to extend the seawall in that section, when funds are available for that protection and filling in the low lands.

From the $2,000,000 bond money $500,000 is allotted for the construction of a two-story warehouse at Third and Channel streets on the China Basin frontage, where a concrete foundation for the great structure was laid in 1923 at a cost of $950,000. This warehouse will be approximately 100 feet wide by 800 feet long and will be used as transit sheds with 190,000 square feet of area.

MODERN PIER PLANS.

Pier No. 50 will be built with frontage on China Basin and $1,000,000 of the bond money is to be used in that necessary improvement. The Atchison, Topeka and Santa Fe Railway has a freight terminal here and the new pier has been designed for the immense traffic that will be developed at that meeting point of rail and steamship. The new pier will be 670 feet long and 386 feet wide. It will have seven railroad tracks connected with the state's Belt Railroad system. Double rail tracks will be laid on either side of the pier and three tracks will be run down the center depressed section. The track depression will make it possible for trucks to be moved out to the end of the pier in loading and discharging, avoiding congestion in the service when two or more ships are berthed at one time. This will be a modern pier in every particular, a marked advance in harbor improvements when contrasted with the handicaps in handling cargoes on old-fashioned narrow piers which latter-day commerce quickly blocks and causes costly delays to



Grain in Islais Terminal to be Cleaned for Export.

shippers and consignees. The Harbor Board has hurried along this necessary betterment and hopes to have the construction well started in the opening of the new year.

Extension of the rock and concrete seawall southward on the line of Islais waterfront will be a most important project to be financed with the remaining $500,000 of bond money soon available.

EXTENDING WATERFRONT SOUTHWARD.

The Board has planned to reclaim and develop the Islais submerged area of 280 acres in three solid filled units, each 1000 feet wide by from 1600 to 3000 feet long, with deep navigable channels 400 feet in depth between the several sections, opening an immense harbor area there and providing for commercial expansion.

It is planned to completely reclaim now one unit of the extensive project, about fifty acres in area. As shipping business develops, the general reclamation scheme will be followed and funds for the extension will be available from the remaining $5,000,000 bond issue authorized in 1913. This development project is recognized in business circles as the most important advancement of the future for, as the port needs further pier extension, the entire southern waterfront area will be improved in like fashion.

The first unit of this extensive harbor area has been reclaimed in part for a length of 800 feet and the seawall is to be extended on its navigable front. In this partial reclamation dredged material from Islais Creek, where a navigation depth of 35 feet is maintained, was deposited inland making a foundation within the seawall line for commercial plants, leaving the seawall extension for a later time, and that work is to be continued in the present development. Dredgings had theretofore been carried on scows to dumping depths in the bay and at considerable expense.

GRAIN TERMINAL A SUCCESS.

On this reclaimed Islais fill a large grain terminal has been built and was in successful operation during the California crop season of 1924, meeting a shipping demand for encouragement in marketing grain. Completion of this commercial addition to harbor developments was one of the early projects of the new Harbor Commission as an aid to California farmers in the season of 1924. Funds for the enterprise were available from the harbor revenue surplus. The business was well started and is being successfully handled by a tenant company, the Islais Creek Grain Terminal Corporation, composed of men prominent in the shipping community. The terminal has a grain cleaning capacity of 600 tons daily and has a handling capacity of 200,000 tons of export barley yearly, providing a foreign market for a long neglected grain-producing industry. The state investment in this property, aside from the land values was $224,337.64. The net revenue to the state from the grain terminal lease and tolls for the year July 1, 1923, to June 30, 1924, was $12,459.02, which is 5½ per cent return on the investment. It is estimated that the revenue from this industry will approximate $25,000 yearly.

In addition to the profits accruing to the state, the improvements in the Islais commercial area have relieved tonnage congestion in the

Looking into Southern Entrance to the Subway at Mission Street. Note the Viaduct Over The Embarcadero from Ferry Building to West Sidewalk, Which Was Built in 1918 and Cost $47,446.53.

central shipping section. Other growing activities in industrial plants on the reclaimed Islais lands are rice mills, oil refineries and lumber yards.

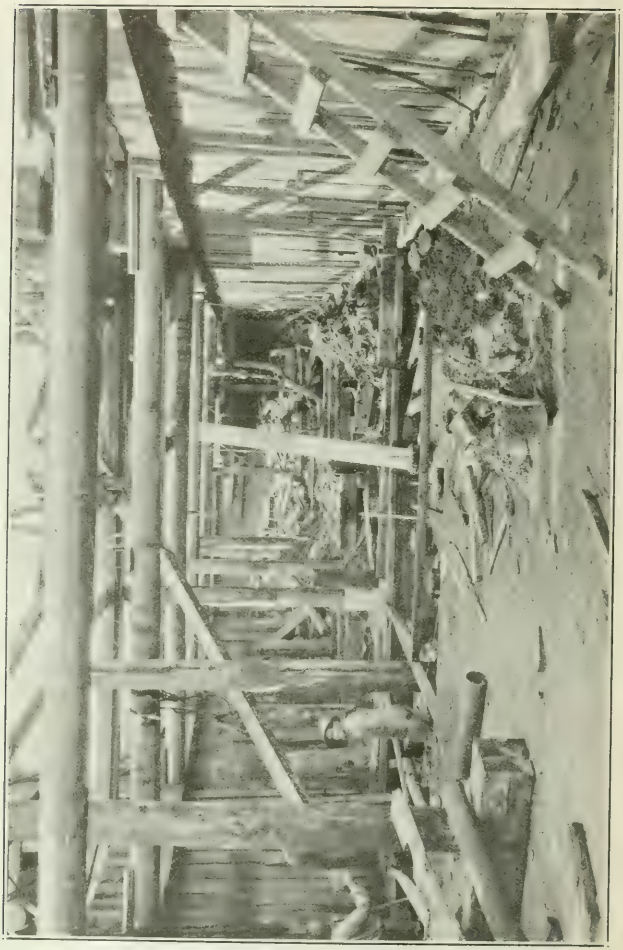
SUBWAY AT MARKET STREET CROSSING.

Assuming management of the state's fast growing business on the San Francisco waterfront in July, 1923, the new Board of State Harbor Commissioners announced its purpose to build a vehicular subway under the ferry street car loop to divert such travel from the Market street crossing on The Embarcadero and make the thoroughfare safe for many thousands of pedestrians. Plans for the necessary improvements were adopted September 6, 1923, and work started in December. President Chas. H. Spear conferred with city and street railroad authorities on financing the project, with the result that the cost of the construction will be borne one-half by the state, one-quarter by the city of San Francisco and one-eighth by each of two city railways. The construction by contract will be completed about the close of the year. The full cost will be about $350,000.

The subway is a reinforced concrete structure 986 feet in length covering a distance of four blocks with a closed section 390 feet long, having a roof of steel and concrete supporting the pavement and street car tracks. Open end approaches are 298 feet in length each and have a grade of 3¾ per cent. The subway section is 23 feet between side walls, 21 feet 8 inches between curbs and has clearance height of 13 feet for the two roadways. The subway floor of reinforced concrete is 5 feet thick, and the sidewalls reinforced concrete 2½ feet thick, the whole being thoroughly waterproofed, for high tide rises to within 6 feet of the surface at that point of the waterfront, the ground being water-bearing.

Planning for the construction of the subway, the engineers of the Commission bored down into what appeared to be an ancient waterfront bulkhead wharf, causing a renewal of interest in the early history of the waterfront. Old timers watched the borings along The Embarcadero and recalled the placing of the piles and heavy timbers along the Market street front during the late eighties. The old platform was found at a depth of twelve feet below street level, and the timbers appeared to be as sound as when they were placed there over a generation ago.

According to the engineers, this structure constituted what is known as a timber relieving platform. The original seawall cut diagonally across The Embarcadero about 180 feet inside of what now constitutes the front of the Ferry Building. About 1889, previous to constructing the Ferry Building, a new concrete seawall was constructed on the front line of the proposed building. The space between this new concrete wall and the old rock seawall was heavily piled on rows at 5 feet and 6 feet centers, filled with sand and decked over at the elevation of low tide. On top of this platform was placed about 12 feet of sand fill carrying the street between the old seawall and the new seawall in front of the Ferry Building. The foundations for the building were then constructed on concrete piers so that the building itself is actually supported on a heavy concrete wharf. The new subway cuts through the ancient relieving platform just east of the original seawall. The engineers expected to remove the timber deck and utilize the original piling



Construction Scene in Subway with Concrete Flooring Being Laid Before Building Side Walls.

for supporting the concrete base of the subway. They reasoned that if the piles supported twelve feet of earth and all the car and team traffic for the past generation, they ought to be adequate to support the new roadway with most of the fill removed. But if any of the piles were not found in their expected locations or if they appeared inadequate when bared again to inspection, provision was made in the contract for adding additional piling. Much of the ancient piling was found sound and it was retained in the foundation work.

FINANCIAL REPORT OF THE 74th AND 75th FISCAL YEARS ENDED JUNE 30, 1923, AND JUNE 30, 1924.

TEXT.

Account 1.—Comparative Statement of Financial Status, as of June 30, 1924, and June 30, 1923.

Schedule No. 1. Fort Mason Tunnel Account.

Schedule No. 2. Analysis of Property and Equipment, showing comparative values of Real Estate, Piers and Wharves, Buildings, Equipment, etc.

Account 2.—Comparative Statement of Revenue and Expense for the Fiscal Years ended June 30, 1924, and June 30, 1923.

Schedule No. 1. Comparative Statement of Operating Revenue and Expense.

Schedule No. 2. Analysis of Revenue from Operations.

Schedule No. 3. Analysis of Expense of Operations.

Schedule No. 4. Comparative Statement of Revenue and Expense of the Belt Railroad, as of June 30, 1924, and June 30, 1923.

Account 1.—In the form of a balance sheet, exhibits the financial status of the Board of State Harbor Commissioners, as of June 30, 1924.

Schedule No. 1. Of this Account, Fort Mason Tunnel Account, shows that there has been realized toward the payment of the cost of the tunnel, between the date of acceptance, October 22, 1914, and June 30, 1924, the sum of $87,789.07, of which $449.51 was realized during the year ended June 30, 1924. A comparison between this amount and the figures of previous years shows that the decrease in revenue of the tunnel has dropped to such a degree that the balance of $185,360.31 will be increased in future years instead of being reduced, because the interest charges as allowed by the United States government—5 per cent yearly on the balance—in several months, during the past year, exceed the credits accruing toward payment of the original cost.

Schedule No. 2. Is an analysis of property and equipment under the jurisdiction of the Board of State Harbor Commissioners, as of June 30, 1924, as compared with June 30, 1923, showing the values of Piers, Wharves, Real Estate Purchased, Buildings and Equipment, etc., in a sum total of $25,047,646.43, as of June 30, 1924.

These figures show the actual cost to the Board to construct or purchase and do not include the value of lands upon which structures are situated, with the exception of the lands at Islais Creek and India Basin.

The appraised value of seawall lots is $5,530,743.50 and the fifty acres in China Basin and Central Basin are appraised at $1,900,000, which amounts do not appear in the inventory.

Account 2.—Exhibits in comparative form the Revenues earned and the offsetting Expense and reflects a surplus from operations for the year ended June 30, 1924, of $1,044,707.39, as compared with the year ended June 30, 1923, of $867,562.37.

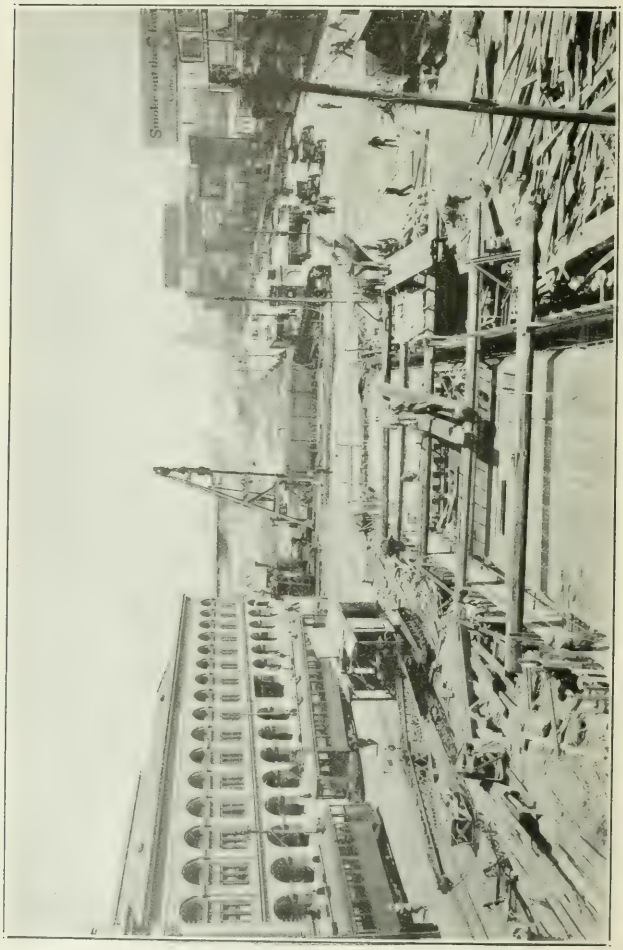
All sources of Revenue during the year just passed show decided increases over the year previous, particularly in Rents, Dockage and Tolls, while at the same time operating expenses show a decrease of $38,349.00 for the past year, as compared with the operating expenses of the previous year.

Schedule No. 1. Of Account 2, shows in comparative form the operating Revenue and Expense by particular location.

Schedule No. 2. Of Account 2, is an analysis of Revenue from Operation and details of Revenue from various sources, as well as by location or function.

Schedule No. 3. Of Account 2. Analysis of Expense of Operation, details by location, the operation expense and repair costs.

Schedule No. 4. Of Account 2, is a comparative statement of Revenue and Expense of the Belt Railroad for the year ended June 30, 1924, as compared with the year ended June 30, 1923. It will be of interest



Subway Construction Scene Looking South from Market Street, Street Car Service Being Uninterrupted.

to note that the Revenue from switching and incidentals thereto was $1,383.59 *less* during the year just passed as compared with the Switching Revenue of the previous year. In spite of this fact, however, the net operating revenue for last year *exceeds* that of the previous year by $18,437.20, due to the decided decrease in operating expense, which brought up the net revenue per car to $.870 as compared with the net revenue per car the previous year of $.728.

Your attention is also invited to the fact that the Revenue for Track Storage the past year was $4,713 as compared with $8,331.50 the previous year, a decrease of $3,618.50. This accounts greatly for the decrease in the total Revenue of the past year.

Exhibit A.—Of this report is a detail of property acquired during the period, showing an expenditure of $869,039.09 for new property and equipment. Of this amount $430,396.88 was expended from revenue earned and $438,642.21 was expended from the Third San Francisco Seawall Fund.

BOARD OF STATE HARBOR

Comparative Statement of Financial

REVENUE

	June 30, 1924		June 30, 1923	
OPERATING ASSETS.				
San Francisco Harbor Improvement Fund		$1,286,490 50		$701,881 12
With State Treasurer	$1,053,021 84		$462,181 14	
With Anglo-London and Paris National Bank	230,468 66		236,699 98	
Office Revolving Fund	3,000 00		3,000 00	
Accounts receivable		162,008 74		192,912 93
Accounts receivable	$179,802 88		$210,707 07	
Less reserve for doubtful accounts	17,794 14		17,794 14	
Fort Mason Tunnel Account		185,360 31		185,809 82
Inventories		205,060 49		128,856 36
Materials and supplies	$195,026 88		$126,334 53	
Work in process	10,033 61		2,521 83	
Deferred charges		14,612 04		17,673 15
Prepaid fire insurance	$10,770 33		$17,493 79	
Unallocated expense	3,131 98		179 36	
Suspense—fire losses	709 73			
Totals		$1 853,532 08		$1,227,133 38

CURRENT BOND

Bond Issue Funds		$139,578 01		$554,110 19
Second San Francisco Seawall Fund	Nil		$1,000 00	
Third San Francisco Seawall Fund	$139,126 73		552,658 91	
India Basin Fund	451 28		451 28	
Sinking Funds		257,060 00		317,258 74
For bond maturities	Nil		$57,898 74	
For bond interest maturities	$257,060 00		259,360 00	
Totals		$396,638 01		$871,368 93

PROPERTY

Property and equipment		$25,047,646 43		$24,260,377 41
Balance beginning of fiscal year	$24,260,377 41		$23,268,105 19	
Property acquisitions, current year—				
From revenue accounts	430,396 88		649,868 54	
From bond funds	438,642 21		355,737 52	
	$25,129,416 50		$24,273,711 25	
Less current year losses	81,770 07		13,333 84	
Totals		$25,047,646 43		$24,260,377 41

TRUST

Trust cash		$10,651 75		$1,831 45
Guarantee deposits	$10,651 75		$1,812 25	
U. S. Government tax deposits			19 20	
Totals		$10 651 75		$1,831 45

COMMISSIONERS. **ACCOUNT 1.**

Status as of June 30, 1924, and June 30, 1923.

ACCOUNTS

	June 30, 1924		June 30, 1923	
OPERATING LIABILITIES.				
Accounts payable		$140,962 87		$108,134 73
San Francisco Harbor Improvement Fund	$140,962 87		$108,134 73	
Deferred credits to revenue		73,266 24		93,477 99
Unearned prepaid rentals	$73,266 24		$93,477 99	
Revenue surplus		1,639,302 97		1,025,520 66
Balance beginning of fiscal period	1,025,520 66		818,077 56	
Adjustment of prior year revenue	528 20		10 250 73	
	$1,024,992 46		$807,826 83	
Current revenue surplus (Account 2)	1,044,707 39		867,562 37	
	$2,069,699 85		$1,675,389 20	
Less amount expended for properties and equipment	430,396 88		649,868 54	
Totals		$1,853,532 08		$1,227,133 38

FUNDS

Accounts payable		$25,110 03		$1,000 00
Second San Francisco Seawall Fund	Nil		$1,000 00	
Third San Francisco Seawall Fund	$25,110 03			
Sinking Fund Liabilities		257,060 00		317,258 74
Matured bonds	Nil		$57,898 74	
Matured bond interest	$257,060 00		259,360 00	
Current Bond Fund surplus		114,467 98		553,110 19
Balance beginning fiscal year	$553,110 19		$908,847 71	
Bonds sold during period	Nil		Nil	
	$553,110 19		$908,847 71	
Less amount expended for properties and equipment	438,642 21		355,737 52	
Totals		$396,638 01		$871,368 93

ACCOUNTS

Bonded Indebtedness		$12,853,000 00		$12,910,101 26
S. F. Seawall Bonds, outstanding (unmatured)	Nil		$57,101 26	
Second S. F. Seawall Bonds, outstanding	$9,000,000 00		9,000,000 00	
Third S. F. Seawall Bonds, outstanding	3,000,000 00		3,000,000 00	
India Basin Bonds, outstanding	853,000 00		853,000 00	
Reserve for depreciation of property		1,500,000 00		1,200,000 00
Property surplus		10,694,646 43		10,150,276 15
Totals		$25,047,646 43		$24,260,377 41

ACCOUNTS

Trust liabilities		$10,651 75		$1,831 45
Special deposits	$10,651 75		$1,812 25	
U. S. Government tax charges			19 20	
Totals		$10,651 75		$1,831 45

FORT MASON TUNNEL ACCOUNT—ACCOUNT 1. SCHEDULE 1.

Analysis of account showing liquidation to June 30, 1924, of the cost of that section of the Fort Mason Tunnel within the confines of the Fort Mason Military Reservation, in accordance with the agreement between the Board of State Harbor Commissioners and the United States Government.

EXCERPTS FROM AGREEMENT REFERRED TO:

SECTION 3. "That all freight of the United States, or freight originating or incident to any portion of the region to the east or west of Fort Mason passing through the tunnel shall pay, in addition to an equitable track and switching charge, a tunnel charge of $10.00 per car."

SEC. 5. "All tunnel charges shall be applied toward paying the cost of the work * * * including interest at 5 per cent per annum, and as soon as that sum has been paid said charges will cease and thereafter there shall be no further tunnel charges. If unforeseen or unusual conditions or accidents shall at any time make a further charge necessary or equitable it shall be governed by additional regulations of the Secretary of War."

	Cost	Interest charges	Tunnel toll credits	Balance
Cost of that section of the tunnel within the confines of the Fort Mason Military Reservation—per Chief Engineer's figures at date of acceptance, October 22, 1914	$273,149 38			
June 30, 1915		$9 446 42	$8,500 00	$274,095 80
June 30, 1916		13,704 79	18,155 00	269,645 59
June 30, 1917		13 482 28	14,705 00	268,422 87
June 30, 1918		13,421 14	33,970 00	247,874 01
June 30, 1919		12,393 70	40,340 00	219 927 71
June 30, 1920		10,996 39	23,020 00	207,904 10
June 30, 1921		10,395 20	28,334 00	189,965 30
June 30, 1922		9,499 77	13,000 00	186,495 07
June 30, 1923		9,324 75	10,010 00	185,809 82
June 30, 1924		9,290 49	9.740 00	185,360 31
Totals	$273,149 38	$111,954 93	$199,744 00	$185,360 31

BOARD OF STATE HARBOR COMMISSIONERS—ACCOUNT 1. SCHEDULE 2.

Analysis of property and equipment as of June 30, 1924, and June 30, 1923, showing comparative values of real estate, piers and wharves, buildings, equipment, etc.

	Balance, June 30, 1924	Balance, June 30, 1923
Real estate purchase—		
El Embarcadero, foot of Harrison street	$25,000 00	$25,000 00
India Basin	852,548 72	852,548 72
Total real estate	$877,548 72	$877,548 72
Seawall lots—		
Seawall Lot C—cost of filling	$7,732 93	$7,732 93
Seawall Lot 21—cost of filling	891 22	891 22
Islais inner	563 00	
Total Seawall lots	$9,187 15	$8,624 15
Piers and wharves—		
Fisherman's wharves	$141,537 09	$137,992 81
Pier No. 43	107,111 18	107,078 43
Pier No. 41	403,885 69	403,881 79
Pier No. 39	567,510 11	567,527 63
Pier No. 37	400,706 64	400,706 64
Pier No. 35	640,174 76	640,174 76
Pier No. 33	586,728 63	586,728 63
Pier No. 31	610,599 52	610,599 52
Pier No. 29	543,311 41	543,311 41
Pier No. 27	268,604 42	268,176 04
Pier No. 25	338,363 37	338,363 37
Pier No. 23	132,890 94	132,890 94
Pier No. 21	220,780 23	220,780 23
Pier No. 19	121,534 30	121,534 30
Pier No. 17	308,558 46	307,335 33
Pier No. 15	168,145 77	168,145 77
Pier No. 11	216,111 52	216,111 52
Pier No. 9	87,902 39	87,902 39
Pier No. 7	195,075 92	195,075 92
Pier No. 5	200,205 96	200,060 59
Pier No. 3	491,562 04	491,562 04
Pier No. 1	13,266 50	13,266 50
Pier No. 14	78,538 97	78,538 97
Pier No. 16	244,834 36	244,834 36
Pier No. 18	249,879 25	249,879 25
Pier No. 20	182,015 45	182,015 45
Pier No. 22	268,362 86	268,362 86*
Pier No. 24	226,631 64	226,631 64
Pier No. 26	665,237 15	665,237 15
Pier No. 28	454,340 77	454,340 77
Piers Nos. 30 and 32	1,275,008 89	1,275,008 89
Pier No. 34	227,196 20	222,124 86
Pier No. 36	416,323 37	416,323 37
Pier No. 38	363,311 67	363,311 67
Pier No. 40	368,884 87	368,884 87
Pier No. 42	364,535 90	333,447 44
Pier No. 44	320,468 34	313,714 26
Pier No. 46	340,275 88	340,275 88
Second Street Wharf	6,997 00	6,997 00
Berry Street Wharf	45,934 72	45,934 72
Channel Street Wharf	33,000 00	33,000 00
China Basin Wharves	38,871 75	34,731 64
Pier No. 50	2,557 32	
Pier No. 54	284,059 95	284,059 95
Sixteenth Street Wharf	95,511 28	95,511 28
Central Basin Wharves	102,511 00	102,511 00
Islais Street Wharf	264,731 29	167,197 31
Bulkhead Wharf, Seawall Section D	16,650 40	16,650 40
Bulkhead Wharf, Seawall Section C	14,267 29	14,267 29
Bulkhead Wharf, Seawall Section A	4,200 00	4,200 00
Bulkhead Wharf, Seawall Section 2		

BOARD OF STATE HARBOR COMMISSIONERS—ACCOUNT 1. SCHEDULE 2—Continued.

Analysis of property and equipment as of June 30, 1924, and June 30, 1923, showing comparative values of real estate, piers and wharves, buildings, equipment, etc.

	Balance, June 30, 1924	Balance, June 30, 1923
Piers and wharves—Continued.		
Bulkhead Wharf, Seawall Section 3		
Bulkhead Wharf, Seawall Section 4	$32,064 00	$32,064 00
Bulkhead Wharf, Seawall Section 5	2,160 00	2,270 84
Bulkhead Wharf, Seawall Section 6		
Bulkhead Wharf, Seawall Section 7	36,000 00	36,000 00
Bulkhead Wharf, Seawall Section 8	18,139 80	18,139 80
Bulkhead Wharf, Seawall Sections 11 and 11-A	80,743 00	80,743 00
Bulkhead Wharf, Seawall Section 12	103,130 04	103,130 04
Bulkhead Wharf, Seawall Section 13	5,512 69	5,512 69
Passenger ferry slips—Union Depot	923,054 34	930,924 23
Car ferry slips—Powell street	283,069 60	283,069 60
Car ferry slips—China Basin	145,100 44	145,100 44
Total piers and wharves	$15,348,678 33	$15,204,153 48
Buildings—		
Barge office, Seawall Section B	$18,714 20	$18,714 20
Miscellaneous, Fisherman's Wharf	10,013 52	10,013 52
Booth Market, Fisherman's Wharf	28,540 79	28,540 79
Free Market, Fisherman's Wharf	1,292 42	1,292 42
Borzone Market, Fisherman's Wharf	24,469 75	24,469 75
Boat Builder's Shop, Fisherman's Wharf	11,416 02	11,416 02
Wharfinger's Office, Seawall Section 1	150 00	150 00
Miscellaneous Sheds, Seawall Section 4	3,147 00	3,147 00
Miscellaneous Buildings, Seawall Sections 5 and 6	1,213 81	1,213 81
Union Depot (includes Ferry Building extension, American Express Building, etc.)	1,224,048 03	1,177,824 27
Concrete Office Buildings, Seawall Section 7	20,433 59	20,433 59
Post Office Building, Seawall Section 8	201,248 51	201,248 51
Southern Pacific Creek Route ticket office	3,032 78	3,032 78
Miscellaneous, Seawall Section 8	540 19	540 19
Wells-Fargo Building, Seawall Section 9-A	96,783 24	96,783 24
Launch Offices, Seawall Section 9-A	16,876 73	16,876 73
U. S. Naval Training Station Building, Pier 14	7,707 34	7,707 34
Fire House, Seawall Section 9-B	14,113 47	14,113 47
Miscellaneous, Seawall Section 9-B	4,514 59	4,514 59
Miscellaneous, Central Basin	250 00	250 00
Miscellaneous Buildings, Seawall Lot 4	199 74	199 74
Office Building and Platform, Seawall Lot 5	4,341 87	4,341 87
Shed and Platform, Seawall Lot 11	2,926 30	2,926 30
Shed and Platform, Seawall Lot 12	10,295 64	10,295 64
Market Building, Seawall Lot 16	5,476 00	5,476 00
Miscellaneous, Seawall Lot 17	63 33	63 33
Bunkers Foundation, Seawall Lot 25	2,473 49	2,473 49
Total buildings	$1,714,282 35	$1,668,058 59
Sewers and pavements—		
Sewers	$8,035 47	$6,437 97
Pavements on The Embarcadero	522,720 47	463,849 92
Pavements on streets adjoining Seawall Lots	141,052 74	154,603 81
Total sewers and pavements	$671,808 68	$624,891 70
Seawalls—		
Section E	$251 00	$251 00
Section D	384 48	384 48
Section B	114,601 18	114,601 18
Section A	85,614 53	85,614 53
Section 1	165,631 40	165,631 40
Section 2	167,504 09	167,504 09
Section 3	235,049 51	235,049 51

BOARD OF STATE HARBOR COMMISSIONERS—ACCOUNT 1. SCHEDULE 2—Concluded.

Analysis of property and equipment as of June 30, 1924, and June 30, 1923, showing comparative values of real estate, piers and wharves, buildings, equipment, etc.

	Balance, June 30, 1924	Balance, June 30, 1923
Seawalls—Continued.		
Section 4	$240,872 01	$240,872 01
Section 5	169,893 57	169,893 57
Section 6	126,779 73	126,779 73
Section 7	109,327 99	109,327 99
Section 8	80,000 00	80,000 00
Section 8-B	111,629 12	111,629 12
Section 8-A	86,008 09	86,008 09
Section 9-A	383,666 03	383,666 03
Section 9-B	317,615 63	317,615 63
Section 9	278,462 29	278,462 29
Section 10	116,414 75	116,414 75
Sections 11 and 11-A	85,999 85	85,999 85
Section 12	97,249 95	97,249 95
Section 13	140,238 71	140,238 71
China Basin	1,383 60	1,383 60
Islais street	940 40	825 38
Rock breakwater, Fisherman's Wharf	110,329 03	110,329 03
Total seawalls	$3,225,846 94	$3,225,731 92
General—		
Subway— El Embarcadero	$133,096 17	$207 79
Belt Railroad—roundhouse, shops, offices, main line, tracks, yards, spurs, tunnels, etc.	914,557 87	906,290 34
Street lighting	121,014 72	121,014 72
Foot bridge viaduct to Market street	48,250 10	48,250 10
Islais Street Vegetable Oil Plant	----------	126,561 26
Miscellaneous (including landing, floats, pile boom)	24,275 39	23,811 32
Berry Street and China Basin terminal and warehouse	1,055,332 30	700,837 29
Islais Creek grain terminal	224,337 64	12,632 37
Total general	$2,520,864 19	$1,939,605 19
Equipment—		
Ferry Building	$27,224 84	$26,880 59
Executive offices	17,315 65	16,918 10
Engineering Department	9,600 03	10,684 54
Purchasing Department	1,028 83	1,028 83
Electrical Department	28,166 77	27,488 70
Maintenance and Repair Department	126,111 12	126,400 73
Piers and wharves	1,469 92	1,840 18
Tugs and dredges	127,158 33	127,149 83
Belt Railroad	224,078 50	191,026 50
Automobiles	35,297 87	31,148 50
Fire equipment	72,968 66	72,060 10
Cargo handling	9,009 55	8,621 78
Vegetable Oil Plant, Islais street, including oil barge "Mohican"	----------	70,515 28
Total equipment	$679,430 07	$711,763 66
Total property and equipment	$25,047,646 43	$24,260,377 41

BOARD OF STATE HARBOR COMMISSIONERS—ACCOUNT 2.

Comparative statement of revenue and expense for the fiscal years ended June 30, 1923, and June 30, 1924.

	Fiscal year ended June 30, 1924			Fiscal year ended June 30, 1923		
Operating revenue		$2,750,064 15			$2,654,511 65	
Rentals	$1,186,737 79			$1,146,119 95		
Dockage	218,976 18			191,679 32		
Tolls	884,961 00			847,086 56		
Wharf storage	3,857 24			3,335 96		
Wharf demurrage	26,002 67			22,019 30		
Rent, portable equipment	2,420 85			1,578 79		
Belt Railroad	427,408 42			428,492 01		
Islais Creek Oil Plant				14,199 76		
Operating expense		$1,123,513 29			$1,161,862 29	
General and operating expense	$622,928 56			$640,594 72		
Repairs and maintenance	500,584 73			521,267 57		
Net operating revenue			$1,626,550 86			$1,492,649 36
Miscellaneous receipts and adjustments		$36,447 96			$33,384 34	
Interest on bank balances	$6,671 18			$5,563 55		
Interest on Fort Mason Tunnel account	9,290 49			9,324 75		
Cash discount earned	3,123 13			3,906 70		
Sales of materials, damage charges, etc.	7,247 41			5,585 47		
Adjustment of materials and supplies inventory	376 74			3,256 05		
Power service and current revenue	9,739 01			5,747 82		
Miscellaneous expenditures and adjustments		44,770 17			22,451 33	
Industrial accident compensation	$34,784 23			$8,765 93		
Fire insurance expense	9,985 94			13,685 40		
Net miscellaneous revenue			*8,322 21			10,933 01
Total net revenue			$1,618,228 65			$1,503,582 37
Fixed charges			$573,521 26			636,020 00
Accrued interest on bonds		$516,420 00			$521,020 00	
San Francisco Seawall Bonds	$2,300 00			$6,900 00		
Second San Francisco Seawall Bonds	360,000 00			360,000 00		
Third San Francisco Seawall Bonds	120,000 00			120,000 00		
India Basin Bonds	34,120 00			34,120 00		
Bond maturities		57,101 26			115,000 00	
San Francisco Seawall Bonds	$57,101 26			$115,000 00		
Current revenue surplus			$1,044,707 39			$867,562 37

*Decrease

BOARD OF STATE HARBOR COMMISSIONERS—ACCOUNT 2. SCHEDULE 1.

Comparative statement of operating revenue and expenses for the fiscal years ended June 30, 1924, and June 30, 1923.

	June 30, 1924		June 30, 1923	
	Revenue	Expense	Revenue	Expense
Sections B, C and D of the seawall	$30,900 20	$77 06	$30,798 40	$101 52
Fisherman's Wharf	20,495 80	22,581 68	20,498 14	9,030 00
Car ferry slips, Powell street	44,553 79	1,180 79	49,725 24	6,098 51
Pier No. 43	12,485 84	9,594 64	6,741 94	5,774 34
Pier No. 41	51,796 61	11,513 12	43,135 26	9,134 83
Pier No. 39	43,519 81	2,735 41	27,851 03	5,877 94
Pier No. 37	52,287 28	2,424 12	50,642 82	5,243 60
Pier No. 35	43,454 13	13,446 79	42,475 47	22,643 79
Pier No. 33	30,468 49	974 42	31,960 65	2,104 11
Pier No. 31	34,940 26	761 70	35,582 56	1,449 11
Pier No. 29	49,140 63	4,060 60	38,147 66	2,954 69
Pier No. 27	9,780 10	7,367 98	9,573 85	8,069 66
Pier No. 25	30,723 98	4,837 74	21,393 62	2,829 79
Pier No. 23	13,146 34	910 42	12,310 96	12,927 18
Pier No. 21	26,756 96	8,196 79	25,407 03	10,269 55
Pier No. 19	13,116 33	3,582 36	12,632 52	4,520 76
Pier No. 17	27,015 31	4,103 86	27,912 53	3,564 10
Pier No. 15	20,181 38	164 07	22,702 93	1,481 00
Pier No. 11	29,086 87	5,719 87	26,994 30	6,112 79
Pier No. 9	30,486 39	13,762 11	31,424 59	4,211 59
Pier No. 7	44,781 65	19,364 56	46,145 20	6,718 56
Pier No. 5	23,030 56	1,180 21	21,715 25	1,404 51
Pier No. 3	35,851 58	1,724 51	36,681 33	3,527 53
Pier No. 1	20,052 19	3,496 31	18,822 94	899 28
Pier No. 14	49,634 57	7,335 66	49,495 43	3,495 97
Pier No. 16	38,410 29	8,642 44	38,476 92	4,221 79
Pier No. 18	33,267 82	10,068 43	32,997 67	3,749 38
Pier No. 20	22,574 16	4,566 46	24,026 50	8,929 72
Pier No. 22	26,371 68	1,710 80	22,231 34	3,097 54
Pier No. 24	34,794 21	7,414 67	30,592 82	4,387 34
Pier No. 26	36,802 81	4,415 06	44,520 41	8,300 04
Pier No. 28	35,664 63	11,622 53	32,475 54	8,910 27
Pier No. 30	60,702 34	15,156 22	66,473 93	6,838 80
Pier No. 32	46,495 63	5,021 13	48,294 97	6,813 96
Pier No. 34	25,084 86	18,408 89	21,846 96	5,392 23
Pier No. 36 and car ferry slip	35,942 73	29,756 72	36,715 60	6,610 72
Pier No. 38	29,608 33	1,472 08	27,407 34	5,176 38
Pier No. 40	25,827 38	929 61	23,494 74	2,941 59
Pier No. 42	40,001 47	2,610 05	78,533 94	1,008 46
Pier No. 44	49,309 38	3,907 27	----------	2,356 85
Pier No. 46	53,914 98	6,582 99	43,500 81	3,894 74
Berry Street Wharf and Second Street	5,322 11	----------	3,575 72	----------
Channel Street wharves	15,288 20	7,106 46	13,945 25	6,552 67
China Basin wharves and ferry slip	51,509 79	1,677 05	47,480 52	9,573 81
Pier No. 54	52,156 35	7,374 83	51,397 75	264 47
Central Basin wharves and ferry slip	130,227 84	3,389 83	118,041 87	56,385 94
Tulare Street Wharf	8,848 60	----------	7,432 25	----------
Islais Street Wharf—outer	15,812 43	3,355 34	5,558 51	1,711 64
Islais Street Wharf—inner	8,506 16	1,029 37	6,433 59	2,728 71
Ferry Building (Union Depot) and ferry slips	443,713 26	159,732 52	444,940 47	168,283 65
Seawall lots and lands	188,614 53	2,080 67	180,572 77	2,571 63
El Embarcadero loop	15,240 00	----------	15,000 00	----------
Miscellaneous rents	2,835 86	----------	3,501 25	----------
Streets	----------	37,250 42	----------	47,025 63
Fog bells and underground system	----------	3,024 12	----------	5,904 56
Belt Railroad	427,108 42	300,122 04	428,492 01	324,857 76
Tugs and dredgers	----------	107,363 13	----------	115,411 73
Wharfingers	----------	44,373 27	----------	46,715 79
Administrative expense	----------	74,392 50	----------	84,947 94
Police and fire protection	----------	48,749 15	----------	13,794 95
Portable equipment	2,420 85	369 83	1,578 79	464 69
Islais Creek Vegetable Oil Plant	----------	13 71	14,199 76	12,120 34
Landing floats and pile drivers	----------	4,327 17	----------	----------
General expense	----------	34,399 75	----------	39,651 22
Total operating revenue and expense	$2,750,064 15	$1,123,513 29	$2,654,511 65	$1,162,041 65

BOARD OF STATE HARBOR COMMISSIONERS—

Analysis of revenue from operations for the fiscal years

	Totals		Rentals	
	1924	1923	1924	1923
Sections B, C and D of the seawall	$30,900 20	$30,798 40	$15,977 86	$15,164 40
Fisherman's Wharf	20,495 80	20,498 14	11,526 80	10,239 37
Car ferry slips, Powell street	44,553 79	49,725 24	570 00	1,057 50
Pier No. 43	12,485 84	6,741 94	3,116 61	1,350 00
Pier No. 41	51,796 61	43,135 26	4,036 80	1,524 35
Pier No. 39	43,519 81	27,851 03	10,821 94	2,679 90
Pier No. 37	52,287 28	50,642 82	15,028 97	15,062 28
Pier No. 35	43,454 13	42,475 47	14,059 80	14,059 80
Pier No. 33	30,468 49	31,960 65	9,877 92	9,877 92
Pier No. 31	34,940 26	35,582 56	8,787 36	8,792 40
Pier No. 29	49,140 63	38,147 66	16,889 72	16,459 68
Pier No. 27	9,780 10	9,573 85	1,605 00	1,507 50
Pier No. 25	30,723 98	21,393 62	7,110 19	7,175 85
Pier No. 23	13,146 34	12,310 96	2,987 76	3,454 01
Pier No. 21	26,756 96	25,407 03	6,763 92	6,643 92
Pier No. 19	13,116 33	12,632 52	6,552 12	6,433 87
Pier No. 17	27,015 31	27,912 53	10,093 60	11,385 09
Pier No. 15	20,181 38	22,702 93	15,188 16	15,338 16
Pier No. 11	29,086 87	26,994 30	7,536 36	7,536 36
Pier No. 9	30,486 39	31,424 59	12,910 69	13,012 32
Pier No. 7	44,781 65	46,145 20	20,839 49	20,407 96
Pier No. 5	23,030 56	21,715 25	12,576 80	11,580 43
Pier No. 3	35,851 58	36,681 33	21,100 44	21,275 44
Pier No. 1	20,052 19	18,822 94	5,075 04	4,900 04
Pier No. 14	49,634 57	49,495 43	47,152 20	47,152 20
Pier No. 16	38,410 29	38,476 92	19,261 32	19,261 32
Pier No. 18	33,267 82	32,997 67	17,082 84	17,082 84
Pier No. 20	22,574 16	24,026 50	11,633 40	11,617 29
Pier No. 22	26,371 68	22,231 34	7,045 68	7,800 47
Pier No. 24	34,794 21	30,592 82	14,846 97	12,101 75
Pier No. 26	36,802 81	44,520 41	12,338 64	12,388 64
Pier No. 28	35,664 63	32,475 54	8,561 36	8,472 26
Pier No. 30	60,702 34	66,473 93	15,013 20	15,426 21
Pier No. 32	46,495 63	48,294 97	13,146 72	12,733 71
Pier No. 34	25,084 86	21,846 96	7,493 16	7,174 25
Pier No. 36	35,942 73	36,715 60	4,727 52	4,452 52
Pier No. 38	29,608 33	27,407 34	13,300 85	14,540 88
Pier No. 42	25,827 38	23,494 74	9,649 48	7,397 40
Pier No. 44	40,001 47	78,533 94	7,741 76	7,356 25
Pier No. 46	49,309 38	.....	12,010 08	.....
Berry Street and Second Street wharves	53,914 98	43,500 81	12,930 60	13,016 46
Channel Street Wharf	5,322 11	3,575 72	2,977 20	3,452 20
China Basin wharves and car ferry slip	15,288 20	13,945 25	.....	.....
Pier No. 54	51,509 79	47,480 52	10,852 90	13,045 40
Central Basin wharves and car ferry slip	52,156 35	51,397 75	17,533 32	17,533 32
Tulare Street Wharf	130,227 84	118,041 87	45,937 65	40,108 30
Islais Street Outer Wharf	8,848 60	7,432 25	240 00	240 00
Islais Street Inner Wharf	15,812 43	5,558 51	.....	.....
Ferry Building (Union Depot) and ferry slips	8,506 16	6,433 59	.....	.....
Seawall lots and lands	443,713 26	444,940 47	427,537 20	427,773 71
El Embarcadero loop	188,614 53	180,572 77	188,614 53	180,572 77
Miscellaneous rents	15,240 00	15,000 00	15,240 00	15,000 00
Portable equipment	2,835 86	3,501 25	2,835 86	3,501 25
Belt Railroad	2,420 85	1,578 79	.....	.....
Islais Creek Vegetable Oil Plant	427,108 42	428,492 01	.....	.....
	.....	14,199 76	.....	.....
Total revenue from operations	$2,750,064 15	$2,654,511 65	$1,186,737 79	$1,146,119 95

ACCOUNT 2. SCHEDULE 2.

ended June 30, 1924 and June 30, 1923.

Dockage		Tolls		Wharf demurrage and wharf storage		Miscellaneous	
1924	1923	1924	1923	1924	1923	1924	1923
$2,683 70	$2,965 75	$12,238 64	$12,668 25				
8,969 00	10,258 77						
		43,983 79	48,667 74				
2,424 80	2,081 80	6,935 30	2,708 04	$9 13	$602 10		
8,137 40	3,120 80	38,377 96	38,198 12	1,244 45	291 99		
7,325 05	3,764 55	24,798 12	19,753 37	574 70	1,653 21		
7,386 80	4,431 20	29,213 75	30,363 08	657 76	786 26		
2,376 50	2,256 55	26,489 63	25,993 37	528 20	165 75		
3,467 20	1,897 95	16,559 59	19,959 82	563 78	224 96		
2,068 65	1,522 15	23,517 25	24,359 76	567 00	908 25		
2,262 85	1,566 60	29,268 76	19,522 38	719 30	599 00		
1,433 80	1,361 20	3,930 70	3,738 30	2,810 60	2,966 85		
1,942 40	1,886 40	20,349 75	11,934 98	1,321 64	396 39		
3,851 45	5,326 80	3,865 18	2,718 25	2,441 95	811 90		
4,515 40	3,104 80	15,364 29	15,348 45	113 35	309 86		
3,916 75	3,756 15	2,610 11	2,413 00	37 35	29 50		
5,283 80	4,453 50	10,900 64	11,877 79	737 27	196 15		
2,927 05	2,065 55	2,066 17	5,299 22				
3,274 60	1,866 40	17,211 43	17,404 54	1,064 48	187 00		
9,701 05	9,341 55	7,866 90	9,066 97	7 75	3 75		
8,830 25	9,304 60	14,684 03	16,385 18	427 88	47 46		
5,620 75	5,039 00	4,638 56	4,875 52	194 45	220 30		
7,031 25	6,825 85	7,702 39	8,505 69	17 50	74 35		
7,343 55	7,370 15	7,633 60	6,552 75				
2,245 20	2,095 75	237 17	247 48				
6,431 15	5,892 10	11,918 07	12,504 25	799 75	819 25		
4,382 30	4,149 65	10,435 18	10,524 88	1,367 50	1,240 30		
3,663 05	3,086 75	6,995 66	8,726 61	282 05	595 85		
1,956 25	4,261 25	17,144 77	9,398 62	224 98	771 00		
7,517 60	5,434 60	12,039 14	12,860 46	390 50	196 01		
3,185 55	1,016 65	21,038 87	30,226 51	239 75	888 61		
2,437 90	2,284 50	24,552 47	21,419 06	112 90	299 72		
2,686 00	4,725 00	42,937 51	46,269 27	65 63	53 45		
3,470 30	4,395 20	28,243 37	28,981 21	1,635 24	2,184 85		
4,417 70	1,518 75	12,991 00	12,910 96	183 00	243 00		
4,364 15	2,610 05	26,815 06	29,438 58	36 00	214 45		
6,019 00	6,131 05	10,117 63	6,489 66	170 85	245 75		
3,845 65	1,860 95	12,130 22	13,550 46	202 03	685 93		
3,948 75	7,346 10	28,124 72	63,184 71	186 24	646 88		
2,391 45		34,701 58		206 27			
2,738 90	4,095 10	37,891 39	25,409 25	354 09	980 00		
744 75	110 70	1,583 92	12 82	16 24			
4,515 40	5,672 85	10,772 80	8,222 90		49 50		
6,026 20	4,203 80	34,620 79	30,226 52	9 90	4 80		
5,166 15	4,199 55	26,549 87	26,456 93	2,907 01	3,207 95		
14,478 23	13,896 20	69,792 61	64,005 27	19 35	32 10		
4,508 50	3,708 85	4,100 10	3,483 40				
1,782 10	855 00	7,637 84	3,781 43	6,392 49	922 08		
3,279 90	2,560 85	5,206 66	3,273 99	19 60	598 75		
		16,176 06	17,166 76				
						$2,420 85	$1,578 79
						427,108 42	428,492 01
							14,199 76
$218,976 18	$191,679 32	$884,961 00	$847,086 56	$29,859 91	$25,355 26	$429,529 27	$444,270 56

BOARD OF STATE HARBOR COMMISSIONERS—ACCOUNT 2. SCHEDULE 3.

Analysis of expense of operation for fiscal years ended June 30, 1924 and June 30, 1923.

	Totals		General and operating expense		Repairs and maintenance	
	June 30, 1924	June 30, 1923	June 30, 1924	June 30, 1923	June 30, 1924	June 30, 1923
Sections B, C and D of the seawall	$77 06	$101 52	$77 06	$101 52		
Fisherman's wharf	22,581 68	9,030 00	1,024 80	3,167 96	$21,556 88	$5,862 04
Car ferry slip, Powell street	1,180 79	6,098 51	98 07	23 67	1,082 72	6,074 84
Pier No. 43	9,594 64	5,774 34	65 70	145 08	9,528 94	5,629 26
Pier No. 41	11,513 12	9,134 83	579 62	1,087 07	10,933 50	8,047 76
Pier No. 39	2,735 41	5,877 94	274 30	1,649 23	2,461 11	4,228 71
Pier No. 37	2,424 12	5,243 60	668 78	818 71	1,755 34	4,424 89
Pier No. 35	13,446 79	22,643 79	477 98	574 85	12,968 81	22,068 94
Pier No. 33	974 42	2,104 11	359 15	442 40	615 27	1,661 71
Pier No. 31	761 70	1,449 11	360 45	444 27	401 25	1,004 84
Pier No. 29	4,060 60	2,954 69	423 54	562 12	3,637 06	2,392 57
Pier No. 27	7,367 98	8,069 66	337 39	476 37	7,030 59	7,593 29
Pier No. 25	4,837 74	2,829 79	257 91	383 74	4,579 83	2,446 05
Pier No. 23	910 42	12,927 18	217 11	2,607 94	693 31	10,319 24
Pier No. 21	8,196 79	10,269 55	244 37	878 19	7,952 42	9,391 36
Pier No. 19	3,582 36	4,520 76	231 49	949 02	3,350 87	3,571 74
Pier No. 17	4,103 86	3,564 10	353 78	398 54	3,750 08	3,165 56
Pier No. 15	164 07	1,481 00	118 73	26 01	45 34	1,454 99
Pier No. 11	5,719 87	6,112 79	293 40	447 51	5.426 47	5,665 28
Pier No. 9	13,762 11	4,211 59	308 95	489 50	13,453 16	3,722 09
Pier No. 7	19,364 56	6,718 56	567 50	1,000 51	18,797 06	5,718 05
Pier No. 5	1,180 21	1,404 51	267 80	50 29	912 41	1,354 22
Pier No. 3	1,724 51	3,527 53	450 11	572 82	1,274 40	2,954 71
Pier No. 1-A	1,345 80	798 59			1,345 80	798 59
Pier No. 1	2,150 51	100 69	80 85	78 91	2,069 66	21 78
Pier No. 14	7,335 66	3,495 97	336 20	563 66	6,999 46	2,932 31
Pier No. 16	8,642 44	4,221 79	260 77	330 93	8,381 67	3,890 86
Pier No. 18	10,068 43	3,749 38	341 18	398 45	9,727 25	3,350 93
Pier No. 20	4,566 46	8,929 72	624 16	188 91	3,942 30	8,740 81
Pier No. 22	1,710 80	3,097 54	715 01	244 42	995 79	2,853 12
Pier No. 24	7,414 67	4,387 34	442 86	661 09	6,971 81	3,726 25

Pier No. 26	4,415 06	8,300 04	308 35	449 41	4,106 71	7,850 63
Pier No. 28	11,622 53	8,910 27	211 88	350 91	11,410 65	8,559 36
Pier No. 30	15,156 22	6,838 80	242 14	605 87	14,914 08	6,232 93
Pier No. 32	5,021 13	6,813 96	324 95	481 18	4,696 18	6,332 78
Pier No. 34	18,408 89	5,392 23	402 95	375 58	18,005 94	5,016 65
Pier No. 36 and car ferry slip	29,756 72	6,610 72	456 33	1,958 10	29,300 39	4,652 62
Pier No. 38	1,472 08	5,176 38	300 70	147 09	1,171 38	5,029 29
Pier No. 40	929 61	2,941 59	169 98	360 37	759 63	2,581 22
Pier No. 42	2,610 05	1,008 46	241 17	279 62	2,368 88	728 84
Pier No. 44	3,907 27	2,356 85	593 55	435 12	3.313 72	1,921 73
Pier No. 46	6,582 99	3,894 74	790 27	670 10	5,792 72	3,224 64
Channel Street wharves	7,106 46	6,552 67	10 42	9 51	7,096 04	6,543 16
China Basin Wharf and car ferry slip	1,677 05	9,573 81	58 47	3,589 76	1,618 58	5,984 05
Pier No. 54	7,374 83	264 47	212 16	263 72	7,162 67	75
Central Basin wharves and car ferry slip	3,389 83	56,385 94	167 07	968 10	3,222 76	55,417 84
Islais Street Wharf—outer	502 19	1,711 64	----------	182 62	502 19	1,529 02
Islais Street Wharf—inner	1,029 37	2,728 71	16 38	1,761 32	1,012 99	967 39
Ferry Building (Union Depot) and ferry slips	159,732 52	168,283 65	95,972 56	94,224 80	63,759 96	74,058 85
Seawall lots and lands	2,080 67	2,571 63	----------	----------	2,080 67	2,571 63
Streets	37,250 42	47,025 63	19,625 19	23,711 08	17,625 23	23,314 55
Fog bells and underground system	3,024 12	5,904 56	1,772 06	2,897 23	1,252 06	3,007 33
Belt Railroad	300,122 04	324,857 76	199,366 26	204,689 17	100,755 78	120,168 59
Tugs and dredgers	107,363 13	115,411 73	86,624 85	89,259 88	20,738 28	26,151 85
Wharfingers	44,373 27	46,715 79	44,373 27	46,715 79	----------	----------
Office, administrative and legal	74,392 50	84,947 94	74,392 50	84,947 94	----------	----------
Police and fire protection	48,749 15	13,794 95	48,749 15	13,794 95	----------	----------
General	34,399 75	37,854 51	34,399 75	35,685 58	----------	2,168 93
Portable equipment	369 83	464 69	317 11	313 63	52 72	151 06
Landing floats and pile drivers	4,327 17	1,617 35	----------	----------	4,327 17	1,617 35
Islais Creek Vegetable Oil Plant	13 71	12,120 34	----------	11,702 60	13 71	417 74
Islais Creek Grain Terminal	2,853 15	----------	1,970 07	----------	883 08	----------
Total expense of operation	$1,123,513 29	$1,161,862 29	$622,928 56	$640,594 72	$500,584 73	$521,267 57

BOARD OF STATE HARBOR COMMISSIONERS—ACCOUNT 2. SCHEDULE 4.

Comparative statement of revenue and expense of Belt Railroad for the fiscal years ended June 30, 1924, and June 30, 1923, as of July 31, 1924.

REVENUE

	June 30,1924			June 30, 1923		
	Revenue	Number of switches	Revenue per switch	Revenue	Number of switches	Revenue per switch
Switching—						
Local switches at $3.50 each	$400,183 00	114,338		$394,511 25	112,718	
Local switches at $1.40 each	3,186 40	2,276		2,172 00	1,552	
Baggage cars at $5.00 each	860 00	172		1,685 00	337	
Passenger cars at $10.00 each	140 00	14		320 00	32	
Empty cars at $2.25, $3.00, $4.25 each	3,957 75	1,706		4,221 25	1,777	
Total switching revenue	$408,327 15	118,506	$3.445	$402,909 50	116,416	$3.461
Revenue from incidentals to above services—						
Track rental at $2.50 and $0.50 per car per day	$3,782 50			$3,802 50		
Storage charges at $3.00 per day	4,713 00			8,331 50		
Sunday service, use of locomotive and crew, additional to switching charges	975 00			1,771 25		
Equipment rentals, box, flat and locomotive crane	9,106 95			11,172 25		
Miscellaneous	203 82			505 01		
Total incidental revenue	$18,781 27	118,506	$0.159	$25,582 51	116,416	$0.220
Total revenue	$427,108 42	118,506	$3.604	$428,492 01	116,416	$3.681

EXPENSE

	June 30, 1924			June 30, 1923		
	Expense	Number of switches	Expense per switch	Expense	Number of switches	Expense per switch
Maintenance of equipment—						
Locomotives	$32,071 81			$34,011 47		
Flat, box and crane cars	1,641 92			3,936 75		
Shop machinery and tools	1,146 83			1,580 21		
Foreign freight cars	2,337 02			469 63		
Superintendence	2,479 95			3,389 92		
Total maintenance of equipment	$39,677 53	118,506	$0.336	$43,387 98	116,416	$0.373
Maintenance of roadway and buildings—						
Track repairs and renewals	$58,557 79			$73,530 55		
Office buildings	69 89			306 06		
Shops and roundhouses	2,434 56			2,944 00		
Total maintenance of roadway and buildings	$61,062 24	118,506	$0.515	$76,780 61	116,416	$0.660
Operating expense—						
Cleaning yards and cars	$93 91			$102 16		
Operation of locomotive crane	1,577 07			1,310 79		
Yardmasters and yard clerks	13,579 27			14,358 36		
Train and enginemen	125,284 94			127,479 34		
Enginehouse supplies	11,638 87			14,379 08		
Fuel and water for locomotives	43,449 58			43,617 20		
Locomotive supplies and expense	3,490 28			2,952 34		
Clearing wrecks	252 34			489 90		
Total operating expense	$199,366 26	118,506	$1.682	$204,689 17	116,416	$1.758
Accident compensation	$7,002 63	118,506	$0.059	$5,843 31	116,416	$0.050
Administrative and general	$16,855 18	118,506	$0.142	$13,083 56	116,416	$0.112
Total expense	$323 943 84	118,506	$2.734	$343,784 63	116,416	$2.953
Net operating revenue	$103,144 58	118,506	$0.870	$84,707 38	116,416	$0.728

BOARD OF STATE HARBOR COMMISSIONERS—EXHIBIT A.

Detail of property acquired fiscal years 1922-1923 and 1923-1924.

From revenue funds		Fiscal year ending June 30, 1924	Fiscal year ending June 30, 1923
Seawall lots		$563 00	
Piers and wharves—			
Fisherman's wharves and basin		3,544 28	$8,328 44
Pier No. 43		32 75	
Pier No. 41		3 90	623 46
Pier No. 39			2,033 47
Pier No. 33			169 87
Pier No. 27		428 38	585 15
Pier No. 25			970 83
Pier No. 23			14,207 37
Pier No. 21			12,054 20
Pier No. 19			7,701 25
Pier No. 17		1,223 13	3,677 08
Pier No. 5		145 37	12,894 42
Pier No. 20			82 23
Pier No. 22			147,887 95
Pier No. 28			729 26
Pier No. 34		5,071 34	53,270 99
Pier No. 42		31,088 46	41,114 24
Pier No. 44		6,754 08	91,860 82
Pier No. 46			695 89
China Basin wharves			3,085 33
Islais Street Wharf		23,477 70	354 65
Bulkhead Wharf, Seawall Lot, Section 5			110 84
Passenger ferry slips, Union Depot			7,963 25
Total piers and wharves		$72,332 39	$410,400 99
Buildings		$46,223 76	$3,940 94
Sewers and pavements		$46,916 98	$17,065 56
Seawalls		$115 02	
General—			
Subway, El Embarcadero		$132,888 38	$207 79
Belt Railroad, structures and roadway		8,267 53	47,952 81
Islais Street Vegetable Oil Plant			265 73
Pile boom—Islais Creek		464 07	
Berry Street and China Basin Terminal		43,713 32	92,816 78
Islais Creek Grain Terminal		164,598 46	12,632 37
Total general		$349,931 76	$153,875 48
Equipment		$49,436 48	$64,608 02
From bond funds—			
China Basin Terminal		$310,781 69	$355,737 52
China Basin wharves		4,140 11	
Pier No. 50		2,557 32	
Islais Outer Wharf		74,056 28	
Islais Grain Terminal		47,106 81	
Total from bond funds		$438,642 21	$355,737 52
Totals		$1,003,598 60	$1,005,628 51
Deduct—Miscellaneous transfers—unallocated:			
From Pier No. 26	$4 10		
From Fisherman's Wharf	18 35		
From Pier No. 39	$17 52		22 45
From Bulkhead Wharf, Seawall, Section 5	110 84		
From passenger ferry slips, Union Depot	7,869 89		
From Islais Street Vegetable Oil Plant	126,561 26		
		134,559 51	
Total property and equipment acquired		$869,039 09	$1,005,606 06

MONTHLY INCOME FROM UNION DEPOT AND FERRY BUILDING AS OF JULY 1, 1924.

Tenant	Amount
American Railway Express Company	$500 00
Anglo-California Trust Company	10 00
Badaracco, Chas.	30 00
Bernhard and Behrens	100 00
Brown News Company	15 00
Butler and Sons, F. W.	550 00
California Development Association	750 00
California Safety Locker Company (average)	40 06
Checker Taxi Company	100 00
Cohen and Figone	507 67
Ferry Bakerite Company	1,200 00
Foster and Orear	4,100 00
Golden Gate Music Company	125 00
Gordon, I.	230 00
Green Company, Robert	415 00
Key System Transit Company	3,076 84
McPartland and Reich	825 00
Monticello Steamship Company	115 00
Morganthau, Nanette	20 00
Nicholas, J. J.	50 00
Northwestern Pacific Railroad Company	5,830 38
Pacific Telephone and Telegraph Company	821 06
Postal Telegraph and Cable Company	80 00
Presta and Addieco	77 50
Richardson, J. A.	200 00
San Francisco Board of Education	25 00
San Francisco and Sacramento Railway Company	63 36
San Francisco Transfer Company	75 00
Southern Pacific Company	8,297 55
Spring Valley Water Company	60 00
State Board of Prison Directors	100 00
State Department of Agriculture	162 50
State Fish and Game Commission	17 82
State Mining Bureau	250 00
Travelers' Aid Society of California	10 00
Union Transfer Company	261 10
United States Department of Agriculture	50 00
United States Department of Forestry	1,000 00
United States Post Office	3.499 60
Van Noy Interstate Company	500 00
Western Pacific Railroad Company	1,618 20
Western Union Telegraph Company	85 00
Yellow Cab Company	100 00
Total	$35,943 64

MONTHLY AND TERM INCOMES FROM LEASES OF SEAWALL LOTS WHICH WERE EXECUTED PRIOR TO JULY 1, 1924.

Lot	Lessee, term and monthly rental		Total for five-year period	Total for term of lease
15 and portions of 14 23	Southern Pacific Company, 25 years from August 1, 1901	$500 00	$30,000 00	$150,000 00
	Southern Pacific Company, 25 years from October 1, 1909:			
	1st 5 years	990 00	59,400 00	
	2d 5 years	1,325 00	79,500 00	
	3d 5 years	1,271 90	76,314 00	
	4th 5 years	1,422 80	85,368 00	
	5th 5 years	1,552 14	93,128 40	
				393,710 40
24, subd. A	Associated Oil Company, 25 years from October 1, 1909: Assigned to W. R. Grace and Company, October 31, 1918.			
	1st 5 years	214 00	12,840 00	
	2d 5 years	245 00	14,700 00	
	3d 5 years	275 00	16,500 00	
	4th 5 years	306 00	18,360 00	
	5th 5 years	337 00	20,220 00	
				82,620 00
24, subd. B	Southern Pacific Company, 25 years from October 1, 1909: Assigned to Pacific Mail Steamship Company, November 10, 1919.			
	1st 5 years	750 00	45,000 00	
	2d 5 years	1,000 00	60,000 00	
	3d 5 years	1,125 00	67,500 00	
	4th 5 years	1,250 00	75,000 00	
	5th 5 years	1,375 00	82,500 00	
				330,000 00
B	Crescent Lumber Company: Assigned to San Francisco Lumber Company, 25 years from April 1, 1910.			
	1st 5 years	225 00	13,500 00	
	2d 5 years	230 00	13,800 00	
	3d 5 years	235 00	14,100 00	
	4th 5 years	240 00	14,400 00	
	5th 5 years	245 00	14,700 00	
				70,500 00
7	Western Pacific Railway Company, 25 years from July 1, 1910:			
	1st 5 years	1,083 33	64,999 80	
	2d 5 years	1,151 04	69,062 40	
	3d 5 years	1,218 75	73,125 00	
	4th 5 years	1,286 46	77,187 60	
	5th 5 years	1,354 17	81,250 20	
				365,625 00
22, subd. A	Western Pacific Railway Company, 25 years from August 1, 1910:			
	1st 5 years	1,346 39	80,783 40	
	2d 5 years	1,430 54	85,832 40	
	3d 5 years	1,514 69	90,881 40	
	4th 5 years	1,598 84	95,930 40	
	5th 5 years	1,682 98	100,978 80	
				454,406 40
22, subd. B	Western Pacific Railway Company, 22 years and 7 months from January 1, 1913:			
	2 years, 7 months	240 09	7,721 79	
	1st 5 years	264 66	15,879 60	
	2d 5 years	280 23	16,813 80	
	3d 5 years	295 79	17,747 40	
	4th 5 years	311 36	18,681 60	
				76,844 19
19	Atchison, Topeka and Santa Fe Railway Company, 15 years from August 1 1914	170 60	10,236 00	30,708 00
25	W. R. Grace and Company, 20 years from May 17, 1917	318 05	19,083 00	76,332 00
Portion of C	Shell Company of California, 25 years from September 15, 1917:			
	1st 5 years	339 06	20,343 60	
	2d 5 years	389 92	23,395 20	
	3d 5 years	448 41	26,904 60	
	4th 5 years	515 65	30,939 00	
	5th 5 years	592 99	35,579 40	
				137,161 80

MONTHLY AND TERM INCOMES FROM LEASES OF SEAWALL LOTS WHICH WERE EXECUTED PRIOR TO JULY 1, 1924—Concluded.

Lot	Lessee, term and monthly rental		Total for five-year period	Total for term of lease
21	Toyo Kisen Kaisha, 5 years from January 1, 1923	$289 22	$17,353 20	$17,353 20
Portion of 4	Purity Spring Water Company, 15 years from January 31, 1918:			
	1st 5 years	50 00	3,000 00	
	2d 5 years	55 00	3,300 00	
	3d 5 years	60 50	3,630 00	
				9,930 00
Islais Creek	H. W. Peabody and Company (Mohawk Oil Company), 10 years from September 18, 1919:			
	1st 5 years	62 50	3,750 00	
	2d 5 years	75 00	4,500 00	
				8,250 00
Islais Creek	Balfour, Guthrie and Company (Mohawk Oil Company), 10 years from September 18, 1919:			
	1st 5 years	62 50	3,750 00	
	2d 5 years	75 00	4,500 00	
				8,250 00
Islais Creek	Hind, Rolph and Company (Mohawk Oil Company), 10 years from September 18, 1919:			
	1st 5 years	62 50	3,750 00	
	2d 5 years	75 00	4,500 00	
				8,250 00
Islais Creek	S. L. Jones and Company (Mohawk Oil Company), 10 years from September 18, 1919:			
	1st 5 years	62 50	3,750 00	
	2d 5 years	75 00	4,500 00	
				8,250 00
Islais Creek	Willitts and Patterson, 10 years from September 18, 1919:			
	1st 5 years	125 00	7,500 00	
	2d 5 years	150 00	9,000 00	
				16,500 00
	Total			$2,244,690 99

CONTRACT WORK UNDER WAY AT DATE OF LAST BIENNIAL REPORT AND SINCE COMPLETED.

Contractor	Date of Contract	Description	Contract price	Payments	Date	Total	Date of Completion
Tibbitts Pacific Company	Oct. 20, 1921	Furnishing materials and constructing a bulkhead wharf in front of Pier 19 and a concrete bulkhead wharf extending from the existing section in front of Pier 25 to the existing section in front of Pier 21.	$73,788 00	$6,087 51	Dec. 8, 1921		
				6,640 92	Jan. 5, 1922		
			extras 173 73	3,320 46	Feb. 2, 1922		
				4,980 69	Mar. 2, 1922		
				11,068 20	Apr. 6, 1922		
				8,854 56	May 4, 1922		
				8,301 15	June 1, 1922		
				4,427 28	July 6, 1922		
				1,660 23	July 20, 1922		
				173 73	Aug. 3, 1922		
				18,447 00	Aug. 23, 1922		
						$73,961 73	July 18, 1922
Pacific Boat Company	Dec. 8, 1921	Furnishing materials and building a single-screw inspection and tug boat.	$10,759 00	$2,151 80	Dec. 22, 1921		
				2,151 80	Jan. 26, 1922		
				2,151 80	Feb. 23, 1922		
				*10,114 46	June 30, 1922		
						$10,759 00	May 26, 1922
Waterhouse Wilcox Company	Dec. 29, 1921	Furnishing and installing steel rolling or steel lift doors in bulkhead building at Pier 5.	$6,973 00	$3,922 21	June 1, 1922		
				1,307 44	July 20, 1922		
				1,743 25	Aug. 23, 1922		
						$6,973 00	July 18, 1922
Healy-Tibbitts Construction Co.	Feb. 9, 1922	Furnishing materials and constructing the substructure for the China Basin Terminal.	$736,275 13	$49,106 63	Apr. 20, 1922		
				30,834 39	May 25, 1922		
			extras 6,400 93	12,562 16	June 22, 1922		
				39,399 49	July 27, 1922		
				58,813 75	Sept. 23, 1922		
				38,257 48	Oct. 25, 1922		
				20,556 27	Nov. 23, 1922		
				23,411 29	Jan. 4, 1923		
				27,408 36	Jan. 25, 1923		
				29,692 37	Feb. 21, 1923		
				31,405 40	Mar. 22, 1923		
				31,405 39	Apr. 26, 1923		

				29,121 38	May 25, 1923		
				26,266 34	June 21, 1923		
				15,988 20	July 26, 1923		
				12,562 15	Aug. 23, 1923		
				16,559 21	Sept. 20, 1923		
				28,550 36	Oct. 25, 1923		
				8,565 12	Nov. 22, 1923		
				6,400 93	Mar. 13, 1924		
				205,809 41	Feb. 25, 1924		
						$742,676 06	Jan. 20, 1924
Hannah Brothers	June 8, 1922	Furnishing materials and constructing a section of bulkhead wharf in front of Pier 34; furnishing materials and constructing a timber depressed track along the south side of Pier 34 and making certain repairs on the existing Pier 34.	$29,200 00	$3,263 10	Aug. 31, 1922		
				5,496 90	Sept. 8, 1922		
			extras 654 94	1,971 00	Nov. 3, 1922		
				3 723 00	Jan. 4, 1923		
				2,409 00	Feb. 1, 1923		
				4,237 00	Mar. 8, 1923		
				8,100 00	Apr. 8, 1923		
				654 94	Apr. 2, 1923		
						$29,854 94	Feb. 26, 1923

*(Contractor failed and work was completed by Board of State Harbor Commissioners.)

WORK CONTRACTED FOR AND COMPLETED WITHIN BIENNIAL PERIOD JULY 1, 1922, TO JUNE 30, 1924.

Contractor	Date of Contract	Description	Contract	Payments	Date	Total	Date of Completion
Clinton Construction Co.	July 20, 1922	Constructing an extension to Pier 22	$76,365 00	$9,736 54	Sept. 21, 1922		
				7,445 58	Oct. 19, 1922		
			extras 239 53	14,318 44	Nov. 23, 1922		
				7,445 59	Jan. 4, 1923		
				6,872 85	Jan. 18, 1923		
				239 53	Mar. 8, 1923		
				11,454 75	Mar. 29, 1923		
				19,091 25	May 3, 1923		
						$76,604 53	Mar. 29, 1923
Clinton Construction Co.	Aug. 22, 1922	Furnishing materials and making extension to Pier 44	$57,425 00	$4,306 87	Nov. 9, 1922		
				9,044 44	Dec. 6, 1922		
				21,534 38	Mar. 1, 1923		
				8,183 06	Apr. 5, 1923		
				14,356 25	May 10,1923		
						$57,425 00	Apr. 5, 1923
Peters Construction Company	May 14, 1923	Furnishing material and constructing Islais Creek Grain Terminal.	$16,480 00	$3,337 20	June 28, 1923		
				4,573 20	Aug. 2, 1923		
			extras 79 08	4,528 68	Sept. 15, 1923		
				4,120 00	Oct. 18, 1923		
						$16,559 08	Sept. 13,1923
Renner Foundation Company	July 27, 1923	Furnishing material and constructing an extension to Islais Outer Wharf.	$23,600 00	$2,478 00	Oct. 4, 1923		
				8,496 00	Nov. 8, 1923		
			extras 84 47	6,726 00	Dec. 6, 1923		
				5,900 00	Jan. 9, 1924		
				84 47	Dec. 13, 1923		
						$23,684 47	Dec. 5, 1923
Grant and Hart	Sept. 6, 1923	Furnishing material and labor for lowering car ferry apron at Pier 36.	$12,698 00	$5,142 74	Oct. 18, 1923		
				3,904 59	Nov. 15, 1923		
			extras 981 80	476 17	Dec. 6, 1923		
				981 80	Dec. 20, 1923		
				3,174 50	Jan. 1 1924		
						$13,679 80	Nov. 25, 1923

A. G. Raisch	Sept. 13, 1923	Furnishing material and labor for street work from Pier 19 to Pier 27.	$23,515 93	$7,944 30	Nov. 22, 1923		
				2,946 21	Dec. 26, 1923		
				6,746 44	Jan. 17, 1924		
				5,878 98	Feb. 21, 1924		
						$23,515 93	Jan. 16, 1924
Grant and Hart	Dec. 13, 1923	Furnishing labor and material for extension of shed at Islais Creek Grain Terminal.	$45,623 00	$17,108 63	Feb. 8, 1924		
			extras 79 15	8,554 31	Apr. 3, 1924		
				8,554 31	Apr. 17, 1924		
				79 15	June 5, 1924		
				11,405 75	May 22, 1924		
						$45,702 15	Apr. 17, 1924

WORK CONTRACTED FOR AND NOT COMPLETED WITHIN BIENNIAL PERIOD JULY 1, 1922, TO JUNE 30, 1924.

Contractor	Date of contract	Description	Contract price	Payments	Date
Tibbitts Pacific Company	Nov. 2, 1923	Constructing Subway under Ferry Loop on El Embarcadero.	$238,700 00	$20,050 80	Jan. 3, 1924
				20,408 85	Jan. 31, 1924
				10,409 17	Mar. 7, 1924
				4,085 00	Mar. 27, 1924
				6,802 96	Apr. 3, 1914
				9,640 32	May 1, 1924
				2,684 00	May 8, 1924
				21,298 90	May 29, 1924
J. E. Back and Company	Jan. 17, 1924	Furnishing labor for laying marble floors in first floor waiting rooms in Ferry Building.	$30,115 00	$5,853 19	Mar. 6, 1924
				8,869 20	Apr. 3, 1924
				4,536 49	May 1, 1924
				2,817 27	June 5, 1924
				757 74	June 12, 1924
Clinton Construction Company	Mar. 3, 1924	Reconstruction of Islais Outer Wharf	$66,495 00	$3,490 99	June 5, 1924
Renner and Bertolino	May 8, 1924	Furnishing labor and material for repairs to Pier 41	$38,676 00		

REPORT OF CHIEF WHARFINGER.

To the Board of State Harbor Commissioners.

GENTLEMEN: I herewith submit to your honorable Board a few new facts for your consideration:

The Wharfinger's Department is responsible for the collection of moneys through tolls, dockage and wharf demurrage over five and one-half (5½) miles of waterfront. It is a most important department in that it not only collects the moneys but controls and is responsible for the correct movement of cargoes and vessels in coastwise, inland waterway, foreign and intercoastal trade. In order to do this systematically and in a business-like manner, we have inaugurated a system of reports which are made to the Chief Wharfinger, thus enabing his office to keep in constant touch with these operations: That is, in the first place, we keep a strict account of the free-time period and moneys due from demurrage on cargoes loaded or discharged on the different piers and, in the second place, we keep a strict account of the collection of dockage and tolls, and enforce a strict adherence to making formal application for pier assignments. At the present time, we are averaging about 3000 operations per month.

When I first became head of this department in May, 1921, the fiscal year ended in June, 1921, one month later. I desire to show by comparison, taking as a basis our greatest source of revenue—the harbor rents—how the Wharfinger's Department has made substantial gains in revenue from the seventy-third fiscal year to and including the seventy-fifth fiscal year.

Seventy-third Fiscal Year—July 1, 1921, to June 30, 1922.

Greatest revenue—	
Harbor rent	$1,157,395 49
Revenue wharfinger's department	887,548 18
Difference for comparison	$269,847 31

Seventy-fourth Fiscal Year—July 1, 1922, to June 30, 1923.

Harbor rent	$1,147,032 57
Revenue wharfinger's department	1,057,993 93
Difference for comparison	$89,038 64

Seventy-fifth Fiscal Year—July 1, 1923, to June 30, 1924.

Harbor rent	$1,198,303 86
Revenue wharfinger's department	1,133,894 62
Difference for comparison	$64,409 24

By this report, it is clearly shown that this department is advancing in revenue near the total collection of the rents along the waterfront, including the Ferry Building, the difference as shown in the seventy-fifth fiscal year being $64,409.24 as against $269,847.31 in 1921 to 1922, or the seventy-third fiscal year.

Total earnings, 1923-1924	$2,761,080 95
Total earnings, 1921-1922	2,392,702 20
Increase	$368,378 75
Wharfinger's department for same period, 1923-1924	$1,133,894 62
Wharfinger's department for same period, 1921-1922	887,548 13
Increase	$246,346 49

Of the total increase in the total earnings for the periods above mentioned (1921 to 1924), namely $368,378.75, the Wharfinger's Department is responsible for $246,346.49 of same.

There have been several very important changes embodied in the new tariff which will work to a great advantage for the waterfront patrons as a whole and will help to a very great degree the physical conditions at the peak of seasons when cargo offerings are handled in such quantities.

Our tonnage is growing in a substantial manner; for example, during my time as Chief Wharfinger:

July, 1921—June, 1922	8,193,435
July, 1922—June, 1923	10,087,936
July, 1923—June, 1924	10,607,309

Certain commodities which comprise this tonnage require more pier space than others. Certain foreign cargoes can be piled to a great extent while intercoastal cargoes can not and require three times as much pier space. As a result, with the ever-increasing business, we are in great need of new construction to provide for it. This Board of State Harbor Commissioners has seen the necessity of a building program and has already started to relieve a grave situation. As this condition has been realized, the port will forge ahead with healthy strides and all customers of the port will be accommodated with available facilities adequate for what may come.

Speaking of piers, it might be well to give a review of how many there are and to what use they are being put. Before starting the detail, it may be well to add that all piers on the waterfront of San Francisco are assigned to steamship companies excepting three-fourths of Pier 41.

There are 37 steamship companies in foreign trade operating 256 steamers. There are 13 steamship companies in the intercoastal trade operating 125 steamers, making a total of 381 steamers.

There are nine companies of the above list which are without permanent assignment, and operate 39 steamers.

Piers Along the Waterfront Harbor of San Francisco.

Total Piers—40.

Intercoastal and foreign—		Pier 14—U. S. Navy.
46-44-42-40-36-34-30		Pier 15—Coal Bunkers.
32-28-26-22-11-21-25		Pier 27—Potato Dealers (6).
29-31-33-35-37-39-41	(21)	Pier 43—Standard Oil.
Inland waterway—		Pier 54—Associated Terminals.
1-3-5-9-19-23	(6)	Pier—Sixteenth Street, Lumber Docks.
Coastwise—		China Basin, Lumber Docks, Hay.
38-24-20-16-18-7-17	(7)	Islais Creek, Lumber Docks, Grain.

In conclusion, it gives me great pleasure to be able to reflect the sentiments and purposes of the present Board of State Harbor Commissioners and also to be instrumental in putting into effect a policy which will be beneficial both to large operators as well as to the small ones. It is a policy which will hasten to develop a more universal cooperative spirit which we so earnestly desire to have exist along the harbor front of San Francisco at all times.

Respectfully submitted.

FRED S. KNIGHT,
Chief Wharfinger.

October 15, 1924.

TARIFF CHARGES OF THE BOARD OF STATE HARBOR COMMISSIONERS.

Charges for dockage, tolls, demurrage and rentals for use of state piers, wharves and bulkheads and rules and regulations for operation of the departments of the Board of State Harbor Commissioners are fully shown in the Tariff, a publication which can be obtained at the office of the board. The charges are briefly shown in the following statement:

Coastwise trade is defined as trade along the Pacific Coast of the United States between Mexico and the Canadian border inland waterway as trade or service between San Francisco and points located upon the bays, rivers and other inland waters of California; foreign and off-shore as all trans-Pacific trade and Atlantic seaboard trade.

	Definition	Rate	
		Foreign	Coastwise, etc.
Dockage:	*Charge assessed against vessel berthing at own assignment	None.	2 cents per ton first 200 net registered tonnage; ¾ cent each additional ton.
	At outside berths	Full rate.	
Tolls:	**Charge for cargo loaded or discharged on state wharves or in slips	15 cents general.	5 cents general.
Wharf demurrage:	***Charge for cargo delayed on state premises	25 cents ton first five days. 50 cents ton each succeeding five days.	25 cents ton first five days. 50 cents ton each succeeding five days.
Belt Railroad switching:	Charge for switching loaded freight cars between any two points on the tracks of the Belt Railroad	$3.50 per car.	$3.50 per car.

Rental charges will be assessed against steamship companies having sufficient business to require definite assignment of pier space on the basis of $.012 coastwise or inland waterway; $.006 foreign.

*Vessels engaged in foreign trade are not charged dockage at their own assignment. They are required, however, to load or discharge 500 tons per day, etc., in violation of which a penalty will be assessed against the vessel. If at outside berth full rate dockage is charged.

**No tolls will be charged shipper or consignee on import and export traffic moving through the Port of San Francisco on through bills of lading when originating at or destined to Japan, China, Philippine Islands, India, Australia, New Zealand, Fiji Islands or beyond, and when destined to or originating at points in the United States east of Ogden, Salt Lake City and Garfield, Utah; Albuquerque, Belen or Deming, New Mexico; and El Paso, Texas. Such tolls will be absorbed by rail and ocean carriers as shown by Supplement No. 11, Trans-Continental Freight Bureau Westbound Export Tariff No. 29-I, effective April 20, 1922, and Supplement No. 8, Trans-Continental Freight Bureau Eastbound Import Tariff No. 30-H, effective April 20, 1922.

***Foreign cargo must be removed from the wharf within seven days after discharge of vessel; coastwise cargo within five days after discharge of vessel; thereafter penalties as shown accrue. Coastwise cargo may be assembled five days before arrival of vessel; foreign cargo may be assembled seven days before arrival of vessel.

SUMMARY OF TONNAGE OVER WHARVES FOR THE FISCAL YEARS 1922-23 AND 1923-24.

	Inbound				Outbound				
	Coastwise	Inland waterway	Foreign	Total	Coastwise	Inland waterway	Foreign	Total	Grand total
1922—									
July	98,359	228,537	173,581	500,477	48,846	137,128	90,311	276,285	776,762
August	96,526	281,475	215,030	593,031	46,291	130,922	97,688	274,901	867,932
September	91,390	265,272	215,756	572,418	42,687	151,221	115,179	309,087	881,505
October	117,799	270,324	229,275	617,398	47,429	135,748	117,870	301,047	918,445
November	104,054	240,023	191,997	545,074	45,356	123,558	161,536	330,450	875,524
December	91,752	240,194	230,615	562,561	38,420	114,227	129,230	281,877	844,438
1923—									
January	88,750	217,389	209,345	515,484	39,145	133,443	97,403	269,991	785,475
February	97,022	217,891	198,885	514,398	38,893	115,921	82,799	237,613	752,011
March	84,115	240,218	253,159	577,492	49,485	148,343	89,427	287,255	864,747
April	119,187	194,487	205,263	518,937	44,627	116,243	98,259	259,127	778,064
May	91,761	267,810	224,787	584,358	49,098	130,051	103,787	282,936	867,294
June	88,138	237,688	231,435	557,261	45,537	157,229	111,712	318,478	875,739
Totals, 1922-23	1,169,453	2,910,308	2,579,128	6,658,889	539,814	1,594,034	1,295,199	3,429,047	10,087,936
1923—									
July	94,394	223,263	272,680	590,336	46,141	178,549	116,904	341,594	931,930
August	114,118	283,154	266,167	663,439	52,911	153,030	128,346	334,291	997,730
September	108,473	268,868	233,486	610,827	57,414	170,327	103,174	330,915	941,742
October	105,655	291,110	211,207	607,972	50,400	172,225	141,047	363,672	971,644
November	101,420	206,630	216,638	524,088	52,966	197,287	128,362	378,615	903,303
December	88,399	271,599	194,927	554,925	43,744	120,283	120,996	285,023	839,948
1924—									
January	93,085	288,516	227,997	609,598	47,538	123,850	130,234	301,622	911,220
February	102,316	195,905	175,847	474,068	46,458	185,470	123,128	355,056	829,124
March	123,521	239,084	211,871	574,476	52,259	163,552	111,611	327,422	901,898
April	129,362	197,230	183,938	510,530	55,694	140,601	104,990	301,285	811,815
May	114,288	198,138	229,640	542,066	44,996	110,282	95,202	250,480	792,546
June	120,591	210,107	211,326	542,024	48,405	109,209	74,771	232,385	774,409
Totals, 1923-24	1,295,621	2,873,604	2,635,724	6,804,949	598,926	1,824,665	1,378,765	3,802,360	10,607,309

REPORT OF THE SUPERINTENDENT OF THE BELT RAILROAD.

To the Board of State Harbor Commissioners.

GENTLEMEN: I herewith submit biennial report of the operation of the Belt Railroad for the fiscal period beginning July 1, 1922, and ending June 30, 1924.

OPERATION.

The Belt Railroad maintains a twenty-four-hour switching service, except on Sundays and legal holidays, when there is no service between 8 a.m. and midnight, with a provision in the tariff, however, for special engine service on these days, upon payment of the additional cost.

During this biennial period the demands upon the Belt Railroad for service have been increasingly greater, as an inspection of the comparative statement of revenue and expense, printed elsewhere in this report, will indicate. It has been necessary to work additional crews in order to care for this increased business, but by the exercise of strict economy it has been possible to do this and yet effect a saving in the total expense of the road as between the years 1923 and 1924, of nearly twenty thousand dollars. The number of carloads handled in this biennial period was 227,056, the month of October, 1923, being exceptionally high, with 14,368 carloads.

Additional revenue has been derived from the use of the Belt Railroad box cars furnished to shippers on a flat rental basis. The amount received from this source for the two fiscal years is $11,930, representing some 2386 rentals. Another source of revenue is the Belt Railroad crane which is rented to anyone desiring the services of a fifteen-ton capacity locomotive crane. The tariff rate for this service is $7.50 per hour, with a minimum charge of $22.50. The amount received during the two fiscal years is $9,173.25. The amounts received from miscellaneous sources, other than boxcar and crane rentals is detailed in the comparative statement above referred to.

MAINTENANCE.

Cost of track maintenance and maintenance of the mechanical equipment has been kept at the minimum consistent with good operation and safety. During the biennium it has been necessary to renew numbers of switches and frogs in the tracks, 60 new switches being placed at a cost of $27,549 for material and 22 new frogs placed at a cost of $5,492 for material. Much of the track material now in place has been in use for a number of years and consequently is increasingly hard to maintain, requiring frequent renewals and replacements.

CONSTRUCTION.

The reconstruction referred to in the previous report to the Board was completed in 1922 and has been in continuous operation since that time. While this greatly facilitated the movement of trains and the switching to piers and industries, we find ourselves cramped for storage

and yard room with the business we get during the busy season, ranging from July to November. The total mileage, including the tracks at Islais Creek and China Basin, operated by the Southern Pacific Company and Santa Fe, under joint agreement, is now 58.35 miles.

A number of new tracks were built at the site of the China Basin Terminal, connecting this proposed facility with the Belt Railroad. This work was done at a cost of $15,019.19, and until the completion of the warehouse, the trackage can be used for ship spurs.

In order to conform to plans which have been proposed by the municipal authorities for widening and beautifying the Marina boulevard, a portion of the track on the Marina running to the Presidio will be shifted from one side of the road to the other, and this work will be undertaken in the near future.

RECOMMENDATIONS.

The storage and yard room should be increased by the construction of additional tracks. I have previously recommended that The Embarcadero between Mason and Taylor streets be closed and this space filled with tracks for storage of cars, including the extension of tracks known as Ferry 9, 10 and 11. Additional trackage should also be provided on the south side of Market street for storage of cars.

I also recommend that locomotives Nos. 4 and 5 be sold and that order be placed for two additional locomotives of larger type, delivery of one to be made immediately and the other during the coming year. The engines to be disposed of were built in 1911 and 1912, and are in good mechanical condition, but too light for the work we are compelled to perform. With the increased size of boxcars, and the capacity loading insisted upon by the carriers, heavier engines are needed to do the switching on the Belt Railroad.

Respectfully submitted.

T. J. McGinty.
Superintendent.

REPORT OF CHIEF ENGINEER.

To the Board of State Harbor Commissioners,
San Francisco, California.

Gentlemen: I beg to submit herewith for your consideration my report as Chief Engineer of the Board of State Harbor Commissioners, for the two fiscal years beginning July 1, 1922, and ending June 30, 1924.

At the time of the presentation of the last biennial report on July 1, 1922, there were under construction the following structures:

Bulkhead Wharf, Piers 19 and 21 to 25, which was 97 per cent completed.

China Basin Terminal substructure, which was 15 per cent completed.

The bulkhead wharf was completed in July, 1922, at a cost of $107,896.23 and the China Basin Terminal substructure was completed in January, 1923, the total cost being $1,039,107.19.

For the purposes of this report the work of the Engineering Department will be divided as follows:

1. Pier extensions and buildings.
2. Embarcadero subway.
3. Maintenance and repairs.
4. Paving.
5. Electrical.
6. Dredging.
7. Testing.
8. Designing and drafting.
9. Recommendations.

1. PIER EXTENSIONS AND BUILDINGS.

Pier 22, Extension.

Pier 22, which was 400 feet in length and 127 feet in width, was extended into the bay a distance of 323 feet. The extension was not carried to the pierhead line on account of conditions at the site, namely, extremely deep water and a very soft mud bottom. The structure is of creosoted pile and timber construction with a timber frame shed. The cost of the extension was $148,735.98 and it was completed in April, 1923.

Pier 42, Extension.

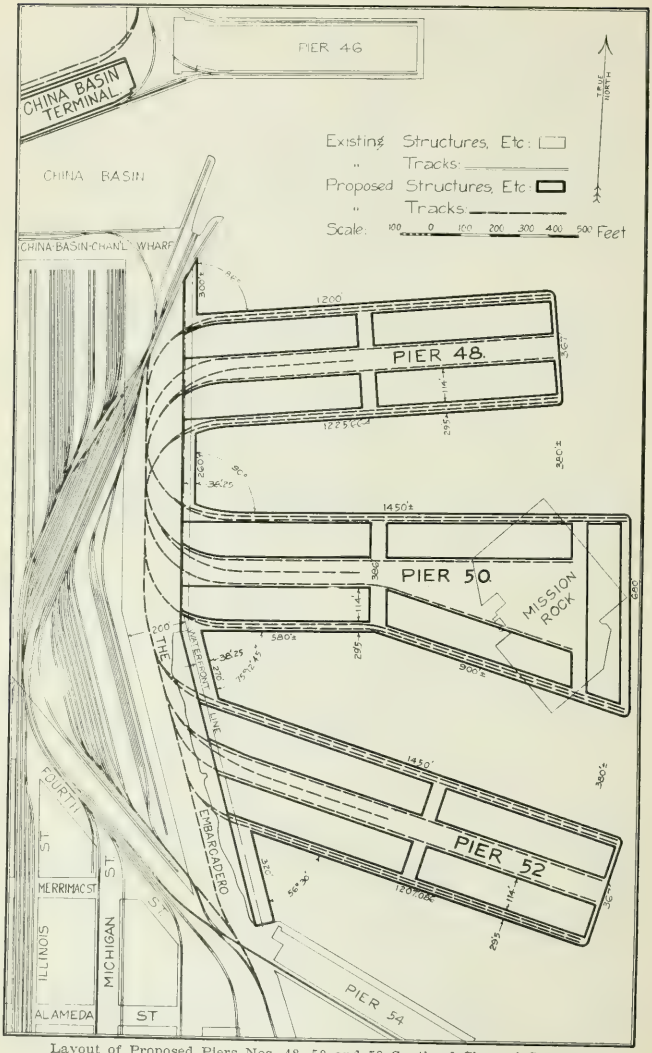
Pier 42 was extended to the old pierhead line, a distance of 148 feet, the width being 145 feet. The extension was of creosoted pile and timber construction with a timber shed and one depressed railroad track. The cost of the structure was $69,647.50, and it was completed in October, 1923.

Pier 44, Extension.

Pier 44 was extended to the old pierhead line, the extension having a length of 149 feet and a width of 145.5 feet. The substructure is of creosoted pile and timber construction with one depressed railroad track on the south side. The shed is a two-story structure of timber with steel girders carrying the second floor. In conjunction with the extension two passenger aprons and sixteen additional freight aprons were constructed for the purpose of landing cargo and passengers on the second floor. The cost of the extension was $89,722.49, and it was completed in April, 1923.

Islais Grain Terminal.

Following the decline in the vegetable oil trade through this port it was decided to convert the oil terminal at Islais Creek into an export grain terminal. The grain which is exported from San Francisco, consisting principally of barley, is all handled in sacks. A considerable proportion, however, requires reconditioning and this necessitated the construction of a plant for cleaning and grading and bins for storage and resacking. The buildings are timber-frame structures covered with corrugated galvaninzed iron. The five-story grader building is 58 feet by 62 feet and houses the cleaning, grading and elevating machinery, which was furnished and installed by the Islais Creek Grain Terminal Corporation, the operators of the terminal. The storage bins are 21 by 79 feet and the resacking bins 18 by 46 feet. The warehouse for the temporary storage of sacked grain has an area of 140,000 square feet.



Layout of Proposed Piers Nos. 48, 50 and 52 South of Channel Street.

It is a one-story structure except for a section 62 feet by 158 feet adjacent to the grader building, where a second story was constructed for the handling of screenings.

The existing wharf along the Islais Creek channel in front of the terminal, an old timber structure, was entirely rebuilt, using creosoted materials. This wharf is 70 by 788 feet and carries one depressed railroad track. An extension at the easterly end was also constructed of creosoted materials, the dimensions being 48 by 503 feet. In order to expedite the receipt of grain by rail, a depressed railroad track 785 feet in length was constructed at the rear of the terminal.

Several separate contracts covered the construction of the grain terminal. On June 30, 1924, the facilities outlined had been completed with the exception of the reconstruction of the old wharf, which was under construction, and the portion of the building extending over the wharf. The entire cost of the improvements aggregates $294,370.

Pier 34, Addition.

Pier 34 was originally constructed with one surface railroad track in the center of the pier shed. This arrangement was found to be very unsatisfactory due principally to the congestion in the relatively narrow building. The center track was therefore removed and a depressed track was constructed along the south side of the pier. The construction was of creosoted piles and timber with a section of reinforced concrete across the existing bulkhead wharf. The cost of the addition was $52,831.79 and it was completed in March, 1924.

Pier 36, Car Ferry Apron.

From the time of its construction difficulty was experienced in operating the car ferry slip at Pier 36 at low stages of the tide. In order to overcome this difficulty it was decided to lower the hinge end of the apron and a section of the deck of the pier 25 feet in width, 150 feet in length and weighing 375 tons. This necessitated supporting the structural steel and reinforced concrete deck on needle beams and jacks, cutting down the concrete cylinder supports, lowering this section of the deck 2½ feet at the outer end to its new position on the cylinders and securing it with reinforced concrete. The work was successfully completed in January, 1924, at a cost of $18,089.83.

Marble Floors—Ferry Building.

The first-floor waiting rooms of the Southern Pacific, Santa Fe, Northwestern Pacific, Key System and Western Pacific Railways were paved with Columbia marble, a hard, light gray marble produced in California. This work greatly improved the appearance of the waiting rooms and also provided a more sanitary floor surface. The marble floors were laid at a cost of $36,073.81 and the work was completed June 30, 1924.

2. EMBARCADERO SUBWAY.

On account of the steady increase in the business of the port and the waterfront industrial district, the congestion of traffic at the intersection of The Embarcadero and the foot of Market street has become increasingly acute. In order to relieve this congestion a vehicular subway is being constructed along The Embarcadero under the street railway loop in front of the Ferry Building. This subway will carry the

auto traffic and over it will pass the street cars and pedestrians without interference from vehicles.

The total length of the subway is 986 feet, consisting of two open approach sections each 298 feet in length and one central closed section 390 feet in length. The grade in the approaches is 3.75 per cent. The southerly entrance is located just north of Mission street and the northerly entrance is opposite the foot of Merchant street. At either end the closed section extends 85 feet beyond the nearest street railway loop track in order to provide a pedestrian way and a passage for automobiles approaching the Ferry Building. The width of the subway is 23 feet and the clear height of the closed section is 13 feet. The roof of this section will serve as a base for the asphalt wearing surface of the street. On account of a general settlement in the vicinity the top of the structure is above the present street surface, but when the work is completed the street will be raised to the established grade.

The subway is a reinforced concrete structure supported on piles and it is waterproofed throughout with membrane waterproofing. Storm-water inlets and drains are provided along both sides, the drains leading to a pump pit located on the westerly side near the center of the closed section. In the pump pit will be installed a 4-inch centrifugal sump pump operated by electric motor and automatically controlled by a float. The closed section of the subway will be lighted by electricity.

A general contract for the construction of the subway was awarded on November 1, 1923, and on June 30, 1924, the work was 57 per cent completed. The estimated cost of the work is $350,000.

3. MAINTENANCE AND REPAIRS.

As in the past the major part of the maintenance and repair work on the waterfront structures was done by our own organization. This has necessitated the continuous employment of three piledriver crews, one top crew and the regular force of carpenters, painters, plumbers and other mechanics. In addition to the regular work of maintenance of the waterfront structures many damages caused by the transportation companies were repaired and charged to the accounts of those responsible. Numerous construction jobs were also done for our tenants and the gross revenue from these two sources for the two fiscal years amounted to $135,388.65.

4. PAVING.

The Board is definitely committed to the policy of the construction of smooth pavement along The Embarcadero, and in conformity with this policy another section of basalt block pavement was removed during the biennial period. This section extended from Pier 19 to Pier 27, the length being 1340 feet and the width 60 feet. The pavement consists of a concrete slab 8 inches in thickness. In conjunction with the work, the existing curbs were reconstructed and the adjacent bulkhead wharf was covered with a 2-inch Topeka wearing surface. The pavement was completed in January, 1924, at a cost of $36,262.64.

Following the construction of the railroad track along the south side of Pier 34 and the removal of the center track, the entire pier was paved over the plank deck with a 2-inch Topeka wearing surface. The extensions to Piers 22, 42 and 44 were also paved with the same material.

5. ELECTRICAL.

All electrical work required on the waterfront during the biennial period was done by our own electrical division, including both maintenance and repairs and new installations. Some of the more important items which were handled by the department were the following:

The extensions to Piers 22, 42 and 44 were wired and Piers 23 and 34 were completely rewired, all in conduit.

In the substructure of the China Basin Terminal all conduits and outlet boxes were roughed in, and the installation of light and power circuits in The Embarcadero subway was begun.

The machines in the shops were changed over to individual drive by the installation of 16 new motors operating with 3 Ø current and with push button control. In conjunction with this change a new switchboard was installed in the engine room.

The circuits for the 2000 decorative lights on the arches of the nave of the Ferry Building were all rewired in conduit.

A new 35-horsepower electric siren was installed on the tower of the Ferry Building. This siren is operated automatically and sounds the correct time received from the Mare Island observatory at 8 a.m., noon, and 5 p.m. daily.

6. DREDGING.

It has been necessary to continue the operation of the dredging equipment with three watches during the last two years in order to maintain the necessary depth of water alongside the piers. With the area to be dredged and the required average depth steadily increasing, it is believed that it will be necessary to retain the three watches permanently.

7. TESTING.

As in the past all materials of construction have been tested and analyzed in our own laboratory during the biennial period. These included Portland cement, sand, gravel and crushed rock for concrete, reinforcing and structural steel, roofing and paving materials, creosote oil, red lead, white lead and graphite paint, linseed oil, etc. Numerous tests were made of specimens of concrete taken from work under construction. The testing of cement, concrete and steel for use in the construction of buildings at the various state institutions by the Department of Public Works, was continued.

8. DESIGNING AND DRAFTING.

During the biennial period the designing and drafting force made numerous studies and prepared plans for various minor items of construction in addition to the principal items which have already been mentioned. Much routine work was also necessary in connection with the permanent records of the department.

Plans were prepared for the following structures, the construction of which has not yet been begun:

China Basin Terminal, Superstructure.

Detail plans for a reinforced concrete building 812 feet in length, six stories in height, 137 feet in width on the first floor, 102 feet in width on all other floors with an automobile ramp and driveway at the second floor level.

Piers 48, 50 and 52.

Preliminary studies for a layout for three piers between Channel street and Pier 54, to be known as Piers 48, 50 and 52.

Pier 50.

Detail plans for Pier 50, length 600 feet, width 386 feet, the portion outside the sheds of creosoted pile and timber construction, the remainder of reinforced concrete construction.

Islais Reclamation.

Preliminary studies for the reclamation of approximately 26 acres of submerged land along the southerly side of Islais Creek east of the grain terminal.

9. RECOMMENDATIONS.

Islais Creek—India Basin Development.

Detail plans are under way for the construction of a portion of the first unit of the Islais Creek—India Basin development. The plans contemplate the construction of approximately 1400 lineal feet of seawall along the southerly side of the Islais Creek channel with a wharf of the same length and 90 feet in width, and the reclamation of 26 acres of submerged land. On account of the nature of the materials available, considerable time will elapse after the land is reclaimed before it will be in usable condition. I therefore repeat the recommendation contained in the last two biennial reports, that this work be started as soon as possible so as to permit of ample time for the settlement and compacting of the fill.

Shops, Purchasing Department and Garage.

The time is rapidly approaching when the space at the north end of the Ferry Building now occupied by the Purchasing Department and the garage, will be required for facilities for the handling of shipping. The housing of these activities in timber structures constitutes a serious fire hazard and this is also true regarding the shops which are located on the dolphin between ferry slips 3 and 4. I recommend that in the near future a fireproof building be constructed on Seawall Lot 17 for the accommodation of these departments.

Paving Berry Street.

Since the completion of the substructure of the China Basin Terminal, it has been used as a thoroughfare by traffic moving between The Embarcadero and the Third street bridge over Channel street. Such traffic interferes with the use of the structure and causes unnecessary wear on the pavement. I recommend that steps be taken to secure the opening and paving of Berry street between Second and Third streets. This will provide a much-needed thoroughfare connecting The Embarcadero with the southerly portion of the industrial district of the city.

Dump Scows.

In the last report reference was made to the age and cost of maintenance of the dump scows which are used by the dredging division. I recommend that two new scows be constructed, the old ones being retained for emergency use.

In conclusion I desire to express my appreciation of the support accorded to me by the Board in connection with the work of the past two years and also to commend the faithful cooperation of all employees of the department.

Respectfully submitted.

FRANK G. WHITE,
Chief Engineer.

REPORT OF ATTORNEY.

To the Board of State Harbor Commissioners.

GENTLEMEN: My report from August 1, 1923, to July 1, 1924, is as follows:

I have drawn for the Board ten contracts which were executed and carried out, involving the sum of $477,469.59.

The following is the history of litigation during the period mentioned:

1. *Henry Cowell Lime and Cement Company* vs. *State of California and members of Board of State Harbor Commissioners.* This is an action to restrain the Board from compelling plaintiff to move off of state property on The Embarcadero. Motion for nonsuit denied and case set for trial.

2. *Leslie Decot* vs. *J. H. McCallum, Harry H. Cosgriff and Miles Standish, as members of, and constituting the Board of Harbor Commissioners of the State of California.* This is an action to compel the Board to pay certain employees for services on holidays on which they did not work. Suit abandoned by plaintiff.

3. *Board of State Harbor Commissioners* vs. *Netherlands Transportation Company.* This is a claim of the Board of State Harbor Commissioners against the estate of a bankrupt for wharfage and tolls due from said transportation company. Claims were presented against the estate of the bankrupt covering the amounts due but no dividends received yet.

4. *People of the State of California* vs. *J. B. Coryell and United States Fidelity and Guaranty Company, a corporation.* This is an action for the recovery of moneys due the Harbor Board for the construction of wharves for the defendant Coryell. Case is on the calendar and ready for trial when reached by the court.

5. *Sunset Lumber Company* vs. *A. L. Pierce, doing business as Pacific Boat Company.* This is an action for the recovery of materials furnished in the construction of a tug boat for the Board of State Harbor Commissioners, the Harbor Board being joined as codefendants with contractor. Action compromised and dismissed by surety for contractor.

6. *Frank A. Somers* vs. *Chas. H. Spear, J. B. Sanford and M. F. Cochrane, constituting the Board of State Harbor Commissioners of the State of California.* This is an action by plaintiff seeking a mandatory injunction to compel the Board to remove the Islais Grain Terminal corporation from the space on the waterfront assigned to said corporation by the Board. Action dismissed.

7. *Frank A. Somers* vs. *Chas. H. Spear, J. B. Sanford and M. F. Cochrane, constituting the Board of State Harbor Commissioners of the State of California, and Islais Creek Grain Terminal Corporation, a corporation.* This is an action against the Board of State Harbor Commissioners and the Islais Creek Grain Terminal Corporation alleging a combination to injure plaintiff in the grain business. Injunction *pendente lite* sought against the Board and denied. Demurrer filed.

8. *John H. Taylor* vs. *Chas. H. Spear, J. B. Sanford and M. F. Coch-*

rane, constituting the Board of State Harbor Commissioners of the State of California in and for the City and County of San Francisco. This is an action to restrain the Board of State Harbor Commissioners from removing plaintiff from space on the waterfront occupied by plaintiff as a bootblack stand. Injunction sought against Board and granted. Case tried and submitted for decision by court.

9. *The United States of America* vs. *John H. McCallum, Fred S. Moody and Harry H. Cosgriff, constituting the Board of State Harbor Commissioners of the State of California, operating the State Belt Railroad.* This is an action to compel the Board of State Harbor Commissioners to operate the Belt Railroad in conformance with the rules and regulations of the Interstate Commerce Commission. Case was tried by the former attorney for the Board and lost. Two appeals have been taken, one to the Circuit Court of Appeals, and one to the Supreme Court of the United States. The action is still pending.

I have attended seven inquests over persons who met with fatal accidets on the Belt Railroad, and examined witnesses at the hearings thereof.

In addition to the foregoing, considerable time and effort has been spent in giving legal advice and counsel to the various departments under the Board on matters involving dockage, riparian rights, water courses, criminal law, admiralty law, state laws and tidelands.

Respectfully submitted.

W. T. PLUNKETT,
Attorney.

BOND ISSUES.

There have been five issues of state bonds for constructions on the San Francisco waterfront, commencing in 1891, when provision was made for the erection of the Ferry Building, which the law makers of the day called "a general ferry and passenger depot," and including the last issue of 1913 for construction of seawall wharves, piers and other betterments.

The authorized bond issues amounted to $22,600,000 and the interest fixed in all issues was 4 per cent. Underwritten by the state, the security made them marketable at that low rate and all but $7,000,000 have been sold, leaving available $2,000,000 for sale in November, 1924, to provide for a new pier of modern design to be No. 50. With that expenditure there is a balance of $5,000,000 for further harbor improvements.

The first seawall bond issue in amount $2,000,000 was sold in 1903, when President Chas. H. Spear of the incumbent commission was president of the State Harbor Commission, and it was a pleasing duty falling to him in 1923 to redeem those bonds from operative earnings of the harbor in the intervening years. The first harbor bonds sold were redeemed earlier.

Prior to the act of 1903 authorizing the first sale of seawall bonds, bonds were sold by the Commission in their entirety at one time and at a premium. Under the act of 1903, passed during Mr. Spear's incumbency, the law was changed so bonds could be sold as desired by the Commission which was a great saving of interest to the state, and all bond issues subsequent to that period were sold at a premium up to the

time of the World War. Provision was also made in the act of 1903 for the redemption of bonds by lot, when sufficient money was in the Sinking Fund, and it was made compulsory upon the State Treasurer to advertise the redemption of such bonds once a year.

Authorized Bond Issues.

Depot and Ferry Building	Act of 1891	$600,000 00
San Francisco Seawall Fund	Act of 1903	2,000,000 00
Second Seawall Fund	Act of 1909	9,000,000 00
India Basin Purchase	Act of 1909	1,000,000 00
Third Seawall Fund	Act of 1913	10,000,000 00
Total		$22,600,000 00

There remains outstanding in these bond issues $15,000,000 and a balance of $5,000,000 unsold bonds.

IMPORTS AND EXPORTS FOR SAN FRANCISCO HARBOR CALENDAR YEAR 1923.

Compilation from Reports to the United States Engineer's Office, San Francisco.

COMPARATIVE STATEMENT OF TRAFFIC.

Year	Tons	Value	Passengers
1919	7,113,067	$523,493,134	50,678,349
1920	7,685,402	775,014,544	53,851,448
1921	8,382,723	765,028,314	52,307,717
1922	14,837,609	1,169,312,045	49,510,211
1923	13,641,884	1,698,370,393	53,443,754

FREIGHT TRAFFIC, 1923.

IMPORTS.

Classes and commodities	Amount in short tons		Value	
	By commodities	By classes	By commodities	By classes
Animal and animal products		6,950		$2,934,946
Fish (crab meat)	1,182		$1,316,266	
Hides	5,213		1,519,380	
Meat and meat products	555		99,300	
Vegetable food products		382,062		52,992,469
Beans, dried	19,155		1,193,836	
Chinese nut oil	6,249		2,041,518	
Cocoa beans	4,353		826,614	
Cocoanut oil	24,735		3,421,082	
Coffee	64,908		17,552,922	
Copra	96,527		7,762,856	
Flour	3,308		205,000	
Nuts	10,044		1,406,400	
Oil, cake	19,170		503,700	
Oil, olive	2,821		933,274	
Rice	9,498		728,487	
Spices	2,152		527,700	
Sugar	102,282		11,901,816	
Tea	5,760		3,154,764	
Vegetables, fresh	11,100		832,500	
Other vegetable products		2,737		2,511,462
Tobacco and tobacco products	265		1,113,093	
Rubber and rubber products	2,472		1,398,369	
Textiles		45,322		71,877,392
Bags	7,473		1,565,113	
Burlap	21,144		4,866,011	
Fibre	12,621		2,471,904	
Silk, raw	4,005		62,039,393	
Silk, fabric	79		934,971	
Wood and paper		77,542		5,662,626
Lumber	11,700		385,200	
Paper and paper products	55,142		4,196,826	
Wood pulp	10,700		1,080,600	
Non-metalic minerals		96,739		1,518,600
Chalk, clay, etc.	2,833		53,100	
Coal and coke	82,729		591,000	
Glass and manufactures of	11,177		874,500	
Ores, metals and manufactures of		48,606		3,726,111
Copper	4,710		1,271,870	
Iron and steel	42,059		1,009,873	
Tin	1,838		1,444,368	
Chemicals		71,695		3,464,896
Fertilizer	39,764		2,137,000	
Nitrate of soda	31,931		1,327,896	
Unclassified	143,404	143,404	22,140,994	22,140,994
Total imports		875,057		$166,829,496

FREIGHT TRAFFIC, 1923—Continued.

EXPORTS.

Classes and commodities	Amount in short tons		Value	
	By commodities	By classes	By commodities	By classes
Animal and animal products		27,892		$8,551,468
Fish	15,858		$3,991,547	
Meat and meat products	453		181,200	
Milk, evaporated and condensed	9,095		2,656,264	
Sole leather	2,486		1,722,457	
Vegetable food products		520 258		40,658,794
Barley	271,337		8,812,440	
Beans	7,237		781,049	
Flour	68,572		3,773,950	
Fruits, canned	50,753		10,724,562	
Fruit, dried	48,893		9,779,610	
Oil, vegetable	1,435		428,400	
Rice	49,696		3,723,257	
Vegetables, fresh	737		66,330	
Vegetables, canned	3,518		1,264,796	
Wheat	18,080		1,304,400	
Other vegetable products		746		5,051,098
Hops	413		129,000	
Tobacco and cigarettes	333		4,922,098	
Textiles		20,243		11,568,332
Cotton, raw	20,243		11,568,332	
Wood and paper		56,432		4,466,263
Lumber and lumber products	47,238		1,996,663	
Paper	9,194		2,469,500	
Non-metallic minerals		1,361,988		38,424,820
Asphalt	8,339		185,400	
Cement	20,164		282,296	
Coal and coke	2,486		24,860	
Crude oil	48,450		433,332	
Fuel oil	582,759		4,079,298	
Gasoline	300,493		16,181,984	
Glass and manufactures of	4,102		443,400	
Kerosene	300,117		12,432,833	
Lubricating oil	63,712		3,945,617	
Paraffin	1,730		64,200	
Salt	29,636		351,600	
Ores, metals and manufactures of		35,833		2,755,022
Iron and steel pipes	26,927		1,817,100	
Lead	8,906		937,922	
Machinery and vehicles		10,084		4,891,897
Automobiles and supplies	1,684		1,294,897	
Machinery	8,400		3,597,000	
Chemicals and drugs		6,412		1,409,327
Explosives	2,811		764,627	
Fertilizers	1,411		56,700	
Paints and varnishes	2,190		588,000	
Unclassified		134,196		32,294,544
Total exports		2,174,084		$150,071,565
Total imports and exports		3,049,141		$316,901,061

RECEIPTS, COASTWISE.

Animal and animal products		28,249		$8,442,396
Butter	974		$866,860	
Cheese	425		238,000	
Eggs	170		59,500	
Fish, fresh	310		46,500	
Fish, canned	19,255		3,851,000	
Hides	425		112,200	
Lard	4,854		1,456,200	
Leather and manufactures	1,822		1,858,440	
Skins, high-class	14		3,696	

FREIGHT TRAFFIC, 1923—Continued.

RECEIPTS, COASTWISE—Continued.

Classes and commodities	Amount in short tons		Value	
	By commodities	By classes	By commodities	By classes
Vegetable food products		917,199		$133,899,886
Beans	2,161		$216,100	
Canned goods	33,649		8,412,250	
Canned pineapple	122,225		30,556,250	
Canned fruit	2,217		498,825	
Canned vegetables	4,691		1,163,368	
Coffee	821		246,300	
Copra	613		49,040	
Dried fruit	1,929		385,800	
Feed	45,433		1,272,124	
Flour	68,927		4,480,255	
Fresh fruit	2,308		230,800	
Fresh vegetables	13,506		1,330,600	
Rice	1,045		85,690	
Sugar, refined	11,661		2,098,980	
Sugar, raw	553,653		77,511,420	
Syrup	36,437		3,279,330	
Vegetable oils	13,015		1,952,250	
Wheat	2,908		110,504	
Other vegetable products		15,264		16,368,620
Cigars and tobacco	5,726		5,840,520	
Cordage and twine	1,596		510,720	
Rubber, crude	147		86,730	
Rubber, manufactured	6,567		9,850,500	
Seeds	430		60,200	
Tan bark	798		19,950	
Textiles		20,947		10,473,500
Carpet and rugs	8,084		4,042,000	
Cotton goods	12,863		6,431,500	
Wood and paper		1,153,413		41,917,772
Furniture	2,822		1,128,800	
Lath	48,444		1,065,768	
Lumber	930,243		16,744,374	
Paper	79,980		19,995,000	
Piles and poles	41,279		1,031,975	
Roofing	1,630		97,800	
Shingles	7,103		177,575	
Shooks	41,912		1,676,480	
Non-metallic minerals		147,411		9,460,089
Asphalt	466		9,320	
Brick	3,556		17,780	
Cement	6,556		98,340	
Coal	11,897		118,970	
Distillate	1,088		42,432	
Fuel oil	34,089		204,534	
Gasoline	22,770		1,206,810	
Glass and manufactures	17,261		5,178,300	
Kerosene	2,822		124,168	
Lime	16,822		504,660	
Lubricating oil	14,978		1,497,800	
Marble	1,924		192,400	
Salt	9,175		64,225	
Sulphur	4,007		200,350	
Ores, metals, etc.		545,715		91,545,150
Copper	2,416		724,800	
Hardware	19,462		5,838,600	
Iron and steel manufactures	79,572		39,786,000	
Iron and steel	181,973		9,098,650	
Nails	29,138		2,331,120	
Pipe and pipe fitting	96,234		12,029,250	
Tin plate	86,878		11,728,530	
Wire	50,041		10,008,200	

FREIGHT TRAFFIC, 1923—Continued.

RECEIPTS, COASTWISE—Concluded.

Classes and commodities	Amount in short tons		Value	
	By commodities	By classes	By commodities	By classes
Machinery and vehicles		40,348		$24,115,320
Automobiles and parts	4,776		$5,349,120	
Electric machinery and apparatus	12,885		5,154,000	
Other machinery	22,687		13,612,200	
Chemicals		63,891		17,797,590
Drugs and chemicals	44,893		13,467,900	
Explosives	2,661		798,300	
Fertilizers	1,262		50,480	
Paint and varnish	5,606		1,681,800	
Soap	9,469		1,799,110	
Unclassified		566,707		113,341,400
Total receipts, coastwise		3,499,144		$467,411,723

SHIPMENTS, COASTWISE.

Animal and animal products		37,894		$11,651,887
Butter	1,851		$1,647,390	
Eggs	524		183,400	
Casein	1,513		302,600	
Cheese	981		549,360	
Fish, canned	19,836		3,967,200	
Hides and leather	9,333		2,463,912	
Leather products	2,205		2,249,100	
Tallow	1,651		288,925	
Vegetable food products		684,517		118,683,597
Barley	6,896		206,880	
Beans	37,013		3,701,300	
Canned goods	112,044		28,011,000	
Coffee	7,555		2,266,500	
Fruit, fresh	19,045		1,904,500	
Fruit, canned	109,753		24,694,425	
Fruit, dried	68,380		13,676,000	
Flour	7,681		499,265	
Feed	42,702		1,195,656	
Hay	27,147		407,205	
Honey	309		77,250	
Rice	42,036		3,446,952	
Sugar, raw	4,321		604,940	
Sugar, refined	120,227		21,640,860	
Syrup	7,816		703,440	
Tea	728		422,240	
Vegetable oils	2,024		303,600	
Vegetables, fresh	14,532		1,453,200	
Vegetables, canned	54,308		13,468,384	
Other vegetable products		10,950		6,451,240
Cigars and tobacco	2,831		2,887,620	
Hops	1,752		911,040	
Rubber and products	1,295		1,942,500	
Seeds	5,072		710,080	
Textiles		30,105		16,492,245
Bags	1,431		228,960	
Carpets and rugs	2,992		1,496,000	
Cotton	3,645		1,822,500	
Hemp	2,519		743,105	
Silk, manufactures of	78		585,000	
Twine and cordage	169		54,080	
Wool	19,271		11,562,600	

FREIGHT TRAFFIC, 1923—Continued.

SHIPMENTS, COASTWISE—Concluded.

Classes and commodities	Amount in short tons		Value	
	By commodities	By classes	By commodities	By classes
Non-metallic minerals		419,575		$12,546,794
Asphalt	5,686		$113,720	
Borax	202		15,150	
Bricks	2,986		14,930	
Cement	53,735		806 025	
Distillate	23,661		922,779	
Fuel oil	156,552		939,312	
Gasoline	28,740		1,523,220	
Glass	4,977		1,493,100	
Kerosene	2,742		120,648	
Lubricating oil	59,318		5,931,800	
Magnesite	2,998		119,920	
Salt	77,970		545,790	
Sulphur	8		400	
Wood and paper		29,822		2,860,846
Furniture	1,183		473,200	
Logs	1,741		43,525	
Lumber	14,282		257,076	
Paper	7,553		1,888,250	
Roofing	914		54,840	
Shingles	1,467		36,675	
Shooks	2,682		107,280	
Ores and metals, manufactures of		120,183		35,907,520
Copper	80,469		24,140,700	
Hardware	1 351		405,300	
Iron and steel	7,658		382,900	
Iron and steel manufactures	19,330		9,665,000	
Junk	1,686		16,860	
Lead	4,935		518,175	
Nails	357		28,560	
Pipe	1,725		215,625	
Wire	2,672		534,400	
Machinery and vehicles		49,067		51,328,960
Automobiles and parts	42,848		47,989,760	
Electric machinery and apparatus	1,961		784,400	
Machinery	4,258		2,554,800	
Chemicals		49,169		7,360,860
Chemicals and drugs	11,759		3,527,700	
Explosives	2,055		616,500	
Fertilizers	25,323		1,012,920	
Paints and varnishes	2,706		811,800	
Soap	7,326		1,391,940	
Unclassified		640,805		128,161,000
Total shipments, coastwise		2,072,087		$391,444,949

SHIPMENTS, INTERNAL.

Animal and animal products		4,013		$1,863,112
Butter	438		$389,820	
Cheese	94		52,640	
Eggs	433		151,550	
Fish, fresh	135		20,250	
Hides	1,643		433,752	
Lead	96		28,800	
Leather	640		652,800	
Livestock	534		133,500	
Vegetable food products		314,669		45,838,391
Barley	4,578		137,340	
Beans	752		75,200	
Canned pineapple	450		112,500	

FREIGHT TRAFFIC, 1923—Continued.

SHIPMENTS, INTERNAL—Concluded.

Classes and commodities	Amount in short tons		Value	
	By commodities	By classes	By commodities	By classes
Vegetable food products—Continued.				
Canned fruit	3,223		$725,175	
Canned vegetables	1,905		472,440	
Coffee	271		81,300	
Corn	8,538		298,830	
Copra	2,087		166,960	
Feed	26,709		747,852	
Flour	9,554		621,010	
Fruit, fresh	8,364		836,400	
Hay	3,654		54,810	
Rice	2,623		215,086	
Sugar, raw	5,000		700,000	
Sugar, refined	220,594		39,706,920	
Vegetables, fresh	3,681		368,100	
Vegetable oils	325		48,750	
Wheat	12,361		469,718	
Other vegetable products		1,798		$1,218,620
Drugs	295		147,500	
Rubber, crude	518		305,620	
Rubber, manufactures	290		435,000	
Seeds	430		60,200	
Tobacco	265		270,300	
Textiles		321		160,500
Carpet and rugs	50		25,000	
Cotton goods	271		135,500	
Wood and paper		21,756		1,444,224
Furniture	1,184		473,600	
Lumber	17,148		308,664	
Paper	2,500		625,000	
Shooks	924		36,960	
Non-metallic minerals				213,499
Asphalt	241		4,820	
Brick	5,243		26,215	
Cement	2,376		35,640	
Coal	70,478		704,780	
Crushed rock	2,937		4,406	
Fuel oil	92,783		556,698	
Glass and products	220		66,000	
Lime	687		20,610	
Lubricating oils and grease	2,957		295,700	
Salt	35,577		249,039	
Ores and metals, manufactures of		20,705		3,548,470
Hardware	4,474		1,342,200	
Iron and steel	6,837		341,850	
Iron and steel, manufactures	2,071		1,035,500	
Lead	3,452		362,460	
Nails	867		69,360	
Pipe and fittings	2,716		339,500	
Wire	288		57,600	
Machinery and vehicles		42,198		46,440.120
Automobiles and parts	40,906		45,814,720	
Farm implements	726		363,000	
Electric machinery and apparatus	386		154,400	
Machinery	180		108,000	
Chemicals		20,537		6,036,850
Explosives	1,685		505,500	
Fertilizers	271		10,840	
Paints and varnishes	18,092		5,427,600	
Soap	489		92,910	
Unclassified		1,153,439		230,687,800
Total shipments, internal		1,792,935		$339,201,995

FREIGHT TRAFFIC 1923—Continued.

RECEIPTS, INTERNAL.

Classes and commodities	Amount in short tons		Value	
	By commodities	By classes	By commodities	By classes
Animal and animal products		34,154		$20,811,076
Butter	2,161		$1,923,290	
Cheese	254		142,240	
Eggs	15,183		5,314,050	
Fish, fresh	921		138,150	
Fish, canned	718		143,600	
Hides	679		179,256	
Leather	11,872		12,109,440	
Livestock	569		142,250	
Poultry	1,797		718,800	
Vegetable food products		398,420		42,571,598
Barley	40,244		1,207,320	
Beans	27,680		2,768,000	
Canned fruit	18,560		4,176,000	
Canned vegetables	16,672		4,134,656	
Canned goods	35,130		8,782,500	
Corn	6,692		234,220	
Copra	341		27,280	
Feed	28,006		784,168	
Flour	38,909		2,529,085	
Fruit, fresh	10,515		1,051,500	
Hay	25,635		384,525	
Molasses	20,000		1,600,000	
Rice	29,385		2,409,570	
Sugar, refined	40,430		7,277,400	
Vegetables, fresh	47,048		4,704,800	
Wheat	13,173		500,574	
Other vegetable products		1,969		904,060
Rubber	1,336		788,240	
Rubber, manufactures	20		30,000	
Seeds	613		85,820	
Textiles		604		1,721,700
Silk, manufactures	197		1,477,500	
Wool	407		244,200	
Wood and paper		83,621		1,740,015
Furniture	13		5,200	
Lath	3,060		67,320	
Lumber	71,505		1,287,090	
Paper	266		66,500	
Piling and ties	170		4,250	
Poles	2,750		82,500	
Shingles	475		11,875	
Shooks	5,382		215,280	
Non-metallic minerals		2,402,349		24,114,941
Asphalt	6,920		138,400	
Brick	45,037		225,185	
Crushed rock	142,125		213,188	
Distillate	7,145		278,655	
Fuel oil	1,739,271		10,435,626	
Gasoline	199,399		10,568,147	
Gravel	68,865		68,865	
Kerosene and Grease	7,574		333,256	
Lubricating oils	13,700		1,370,000	
Sand	111,165		55,583	
Salt	61,148		428,036	
Ores, metals and manufactures of		16,874		1,318,155
Hardware	265		79,500	
Iron and steel	10,931		546,550	
Iron and steel manufactures	250		125,000	
Lead	5,401		567,105	

FREIGHT TRAFFIC 1923—Concluded.

RECEIPTS, INTERNAL—Concluded.

Classes and commodities	Amount in short tons		Value	
	By commodities	By classes	By commodities	By classes
Machinery and vehicles		34,988		$39,100,720
Automobiles and parts	34,826		$39,005,120	
Farm implements	16		8,000	
Machinery	146		87,600	
Chemicals		164		36,200
Fertilizers	50		2,000	
Paints and varnishes	25		7,500	
Other chemicals	89		26,700	
Unclassified		255,461		51,092,200
Total receipts, internal		3,228,577		$183,410.665
Total receipts and shipments, internal		10,592,743		$1,381,469,332

SUMMARY.

FOREIGN.

Classes and commodities	Imports		Exports	
	Tons	Value	Tons	Value
Animal and animal products	6,950	$2,934,946	27,892	$8,551,468
Vegetable food products	382,062	52,992,469	520,258	40,658,794
Other vegetable products	2,737	2,511,462	746	5,051,098
Textiles	45,322	71,877,392	20,243	11,568,332
Wood and paper	77,542	5,662,626	56,432	4,466,263
Non-metallic minerals	96,739	1,518,600	1,361,988	38,424,820
Ores, metals and manufactures	48,606	3,726,111	35,833	2,755,022
Machinery and vehicles			10,084	4,891,897
Chemicals	71,695	3,464,896	6,412	1,409,327
Unclassified	143,404	22,140,994	134,196	32,294,544
Totals	875,057	$166,829,496	2,174,084	$150,071,565

DOMESTIC.

Classes and commodities	Coastwise		Other domestic		Total	
	Tons	Value	Tons	Value	Tons	Value
Animal and animal products	66,143	$20,144,283	38,167	$22,674,181	139,152	$54,304,885
Vegetable food products	1,601,716	252,583,483	713,089	88,409,989	3,217,125	434,644,735
Other vegetable products	26,214	22,819,860	3,766	2,122,680	33,464	32,505,100
Textiles	51,052	26,965,745	925	1,882,200	117,542	112.293,669
Wood and paper	1,183,235	44,778,618	105,377	3,184,239	1,422,586	58,091,746
Non-metallic minerals	566,986	22,006,883	2,615,848	26,078,849	4,641,561	88,029,152
Ores, metals and manufactures	665,898	127,452,670	37,552	4,866,625	787,889	138,800,428
Machinery and vehicles	89,415	75,444,280	77,186	85,540,840	176,685	165,877,017
Chemicals	113,060	25,158,450	20,701	6,073,050	211,868	36.105,723
Unclassified	1,207,512	241,502,400	1,408,900	281,780,000	2,894,012	577,717,938
Totals	5,571,231	$858,856,672	5,021,512	$522,612,660	13,641,884	$1,698,370,393

Ferry Traffic.

General ferry, 981,009 short tons freight; 53,448,923 passengers; 1,660,071 automobiles; 33,415 teams; 13,709 motorcycles; 1,446 stock. Car ferry, 1,632,606 tons freight.

TRAFFIC ON INLAND WATERWAYS.

Inland waterways emptying into San Francisco Bay add largely to the volume of traffic by river steamers plying on the Sacramento and San Joaquin rivers. Official reports made to Major U. S. Grant III, engineer in charge of rivers and harbors on the Pacific coast, covering traffic on the Sacramento and San Joaquin rivers, show increasing harbor tonnage, for most of the shipments are delivered on wharves under control of the Harbor Commission. Major Grant sums up these river traffic reports for the calendar year 1923 as follows:

> (Sacramento and San Joaquin and Mokelumne rivers as one river system.)
> Year 1923—Freight carried, 2,039,798 short tons, value of which was $105,521,832. Passengers carried, 268,169. This vast commerce was carried by 235 registered and 172 unregistered vessels.

Captain A. E. Anderson, president of the California Transportation Company, operating large steamers that move most of the freight on the two rivers, adds interest to Major Grant's report in the following explanation of river traffic conditions on which the federal report is based:

> Major Grant has segregated the tonnage and credited the Sacramento River with 1,264,821 tons, valued at $62,470,235; the San Joaquin River, 679,773 tons valued at $38,027,909; the Mokelumne River (a tributary), 77,204 tons valued at $5,023,688. I prefer to speak of these rivers as one river system because their waters intermingle and I realize that it is impossible to segregate the traffic carried on these waterways to an absolute nicety for the reason that a number of freight vessels gather part of their cargo on the Sacramento River and pass through some connecting slough into the San Joaquin River, where they finish loading and it is quite difficult for the owners of the vessels to furnish Major Grant's office the tonnage from each river separately
>
> You will note an increase of about 240,000 tons in the past two years. The average value, nearly $52 per ton, undoubtedly indicates that this is the most valuable commerce carried on any of the interior waterways of the United States, with the exception of a port like Tampa, Florida, where practically the entire product would be tobacco.
>
> We have every reason to expect the commerce on our California waterways to increase in future as it has during the past ten years. Lands in the delta and valley above are being divided into small holdings and we find today diversified farming in great districts which formerly were scattering grain fields.

These reports show an increased tonnage in 1923 over the traffic for the year 1921, totaling 239,905 tons and an increase in valuation of the freight amounting to $4,805,891. Going back to 1880, the total tonnage on the two rivers for one calendar year was 506,018 tons, the gain in forty years being 1,533,780 tons in valley produce shipped into San Francisco.

HARBOR FACILITIES.

		Total, June 30, 1924
Pier and wharf area—		
Covered	acres	80.81
Uncovered	acres	68.07
Upper floor covered	acres	3.06
Total	acres	151.94
Berthing space, exclusive of pier ends	miles	18.31
Car ferry slips		6
Passenger ferry slips		13
Number of vessels, averaging 400 feet in length which can berth simultaneously		240
Monthly cargo capacity, based on 50 per cent of area, at 500 pounds per square foot. (Tons of 2,000 lbs.):		
Covered	tons	480,000
Uncovered	tons	370,000
Total	tons	850,000
Cargo handling devices—		
15-ton locomotive crane		1
Portable elevator		1
Portable tiering machine		1
Gasoline tractor		1
Electric tractor		1
Four-wheel cargo trucks		12
Stationary cargo masts—Pier 29—		
Two sets of six spans each—two hooks per span; capacity per span	tons	3
Belt Railroad mileage—		
Main line	miles	9.85
Pier and wharf tracks	miles	10.49
Yards and sidings	miles	25.64
Total	miles	45.98
Car capacity—		
Pier and wharf tracks	cars	1,150
Yards and sidings	cars	1,750
Total	cars	2,900

HARBOR FACILITIES—Concluded.

Detailed mileage statement of Belt Railroad and other railroad track within the jurisdiction of the Board of State Harbor Commissioners	Miles			
	Main line varying from single-track to four-track line		Pier and wharf tracks outside bulkhead line	Yard and sundry tracks
	Original single track	Additional parallel tracks		
Administered as Belt Railroad.				
1. Operated and fully controlled by Board—				
China Basin to Market Street	1 24	2 27	3 78	4 13
Market street to Mason street	1 62	2 74	5 09	4 52
Mason street to Fort Mason Tunnel (east portal)	0 70			0 73
West of east portal of tunnel	1 28		0 64	2 59
2. Operated by others, but controlled by Board—				
South of China Basin			0 98	1 03
3. Operated by Board but controlled by railroad—				
China Basin to Market street				2 74
Market street to Mason street				7 01
North Point street line and its branches				2 89
Totals	4 84	5 01	10 49	25 64
Total Belt Railroad trackage, 45.98.				
Not Administered as Belt Railroad.				
4. Operated and controlled by railroads—				
South of China Basin			1 87	10 44
North of China Basin				0 06
Totals	4 84	5 01	12 36	36 14
Total harbor trackage, 58.35 miles.				

DRY DOCKS, MARINE RAILWAYS AND DERRICK FACILITIES IN THE PORT OF SAN FRANCISCO.

Graving Docks.

HUNTER'S POINT.

Bethlehem Shipbuilding Corporation, Limited:
- No. 2. Length, 750 feet; width, top, 103 feet; width, bottom, 86 feet; depth, over sill, 29 feet.
- No. 3. Length, 1,020 feet; width, top, 153 feet; width, bottom, 110 feet; depth over sill, 45 feet 6 inches.

Floating Dry Docks.

Bethlehem Shipbuilding Corporation, Limited:
- No. 2. Length, 271 feet; width, 66 feet; capacity, 2,000 tons.
- No. 3. Length, 301 feet; width, 68 feet; capacity, 2,500 tons.
- No. 4. Length, 450 feet; width, 80 feet; capacity, 6,500 tons.
- No. 5. Length, 421 feet; width, 90 feet; capacity, 12,000 tons.

Moore Shipbuilding Company:
- No. 1. Length, 650 feet; width, 90 feet; capacity, 20,000 tons.
- No. 2. Length, 350 feet; width, 90 feet; capacity, 9,500 tons.

Marine Railways.

Bethlehem Shipbuilding Corporation, Limited:
- No. 1. Length, 320 feet; capacity, 4,000 tons.
- No. 2. Length, 270 feet; capacity, 2,000 tons.

Moore Shipbuilding Company:
- No. 1. Length, 380 feet; width, 76 feet; capacity, 8,000 tons. Length of largest vessel taken, 450 feet. With extensions.
- No. 2. Length, 442 feet; width, 76 feet; capacity, 8,000 tons. Length of largest vessel taken, 510 feet. With extensions.
- No. 3. Length, 360 feet; width, 76 feet; capacity, 5,400 tons. Length of largest vessel taken, 430 feet. With extensions.

Barnes and Tibbitts Shipbuilding and Dry Dock Company:
- No. 1. Length, 340 feet; width, 66 feet; capacity, 4,000 tons.
- No. 2. Length, 290 feet; width, 60 feet; capacity, 2,500 tons.

Hanlon Dry Dock and Shipbuilding Company:
- No. 1. Length, 434 feet; capacity, 12,500 tons.

Shear Leg Derricks.

Bethlehem Shipbuilding Corporation, Limited:
- 1 stationary, 100 ton capacity.
- 1 stationary, 50 ton capacity.
- 1 floating, 20 ton capacity.

Moore Shipbuilding Company:
- 1 stationary, 100 ton capacity.

Barnes and Tibbitts Shipbuilding and Dry Dock Company:
- 1 stationary, 40 ton capacity.

Floating Boom Derricks.

Smith, Rice and Company, Incorporated:
- 1 derrick, length of boom, 100 feet; lifting capacity, 75 tons.
- 1 derrick, length of boom, 100 feet; lifting capacity, 25 tons.
- 1 derrick, length of boom, 100 feet; lifting capacity, 20 tons.

Crowley Launch and Tugboat Company:
- 1 derrick, length of boom, 110 feet; lifting capacity, 75 tons.
- 2 derricks, length of boom, 100 feet; lifting capacity, 25 tons.
- 2 derricks, length of boom, 100 feet; lifting capacity, 5 tons.

Henry C. Peterson, Incorporated:
- 1 derrick, length of boom, 100 feet; lifting capacity, 7 tons.

Haviside Company:
- 1 derrick; length of boom, 96 feet; lifting capacity, 15 tons.
- 1 derrick; length of boom, 100 feet, lifting capacity, 50 tons.
- 1 derrick, length of boom, 100 feet, lifting capacity, 25 tons.

Barnes and Tibbitts Shipbuilding and Dry Dock Company:
- 1 derrick, length of boom, 90 feet; lifting capacity, 7 tons.

TONS OF FREIGHT DISCHARGED AND LOADED OVER THE STATE WHARVES DURING THE TWENTY-SIX YEARS FROM 1894 TO 1920.

Year			*Tons*
1894–1895			3,729,367
1895–1896			3,848,461
1896–1897			3,657,219
1897–1898			3,894,362
1898–1899			4,154,543
1899–1900			4,646,157
1900–1901			5,048,831
1901–1902			4,890,679
1902–1903			5,203,485
1903–1904			5,528,048
1904–1905			5,292,113
1905–1906			5,748,992
1906–1907			6,802,793
1907–1908			6,468,527
1908–1909			6,325,078
1909–1910			6,866,148
1910–1911			6,629,122
1911–1912			6,798,726
1912–1913			7,528,965
1913–1914			7,253,896
1914–1915			7,947,117
1915–1916			8,900,255
1916–1917			9,389,417
	United States transport wharves, Western Sugar Refinery wharves, and Bethlehem Shipbuilding Corporation wharves	465,142	
			9,854,559
1917–1918		9,707,612	
	United States transport wharves, Western Sugar Refinery wharves, Bethlehem Shipbuilding Corporation wharves	550,000	
			10,257,612
1918–1919		8,678,791	
	United States transport wharves, etc., etc.	519,678	
			9,198,469
1919–1920		8,916,798	
	United States transport wharves, etc., etc.	550,000	
			9,466,798
1920–1921		8,208,577	
	U. S. Transport wharves, Western Sugar Refinery wharves, Bethlehem Shipbuilding Corporation wharves, U. S. Steel Products Company wharves, etc.	304,510	
			8,513,087
1921–1922		8,193,435	
	U. S. Transport wharves, Western Sugar Refinery wharves, Bethlehem Shipbuilding Corporation wharves, U. S. Steel Products Company wharves, etc.	434,565	
			8,628,000
1922–1923			10,087,936
1923–1924			10,607,309

SAN FRANCISCO PILOTAGE AND TOWAGE RATES.

Port of San Francisco—Charges, Regulations, Etc., Not Under Jurisdiction of Board of State Harbor Commissioners.

PILOTAGE.

Jurisdiction: San Francisco Board of Pilot Commissioners, a state body, composed of three members. Office of Commissioner, Merchants Exchange Building, San Francisco; Pilot Office, Pier 7, San Francisco.

Pilotage in and out of San Francisco harbor is under the jurisdiction of a State Board of Pilot Commissioners, appointed by the Governor, which body establishes the rules and regulations regarding the conduct of all pilots, as well as licensing and commissioning pilots.

Pilotage in and out of San Francisco Bay is generally compulsory, except as follows:

All vessels sailing under an enrollment, and licensed and engaged in the coasting trade between the Port of San Francisco and any other port of the United States are exempt from pilotage unless a pilot be actually employed.

All foreign vessels and all vessels from a foreign port or bound thereto, and all vessels sailing under a register between the Port of San Francisco and any other port of the United States are liable for pilotage.

Rates for pilotage are fixed by state law as follows:

All vessels under 500 tons, $2 per draught foot;

All vessels over 500 tons, $2 per draught foot and 2 cents per ton for each and every ton registered measurement; and every vessel spoken inward and outward bound, except as hereinafter provided, shall pay the said rates.

A vessel is spoken by day by a pilot boat displaying a union jack, or by night displaying a torch or flare-up within a distance of three miles of the vessel. In all cases where inward bound vessels are not spoken until inside of the bar the rates of pilotage herein provided shall be reduced 50 per cent. Vessels engaged in the whaling or fishing trades shall be exempt from all pilotage except where a pilot is actually employed.

In the event a vessel not carrying cargo to the Port of San Francisco, nor seeking any thereat, is compelled to enter said port solely by reason of her being in distress or requiring repairs, provisions or fuel, the rates of pilotage into said harbor shall be as follows:

All vessels under 500 tons, $1 per draught foot;

All vessels over 500 tons, $1 per draught foot and 1 cent per ton for each and every ton registered measurement; and every vessel spoken inward bound shall pay the said rates. There shall be no reduction of rates of pilotage to vessels in distress where the vessel is spoken inside the bar. In the event that the vessel shall leave the Port of San Francisco without carrying any cargo therefrom, she shall pay the last-mentioned rates of pilotage out of the harbor of San Francisco.

TOWAGE.

Towage in San Francisco is conducted by private tow boat companies and the charges for the services performed vary according to the conditions under which the contract is to be carried out, but are generally assessed within the range of the following schedule:

Sailing Vessels.

The cost of towage from sea (lightship) to anchorage varies with distance and size of vessel, ranging from $100 to $250.

For moving a vessel of 2000 tons net register in the harbor the charges are approximately:

Docking, city front	$75 00
Stream to Port Costa or Port Costa to stream	175 00
Stream to sea (lightship)	200 00

Fore and aft rigged vessels pay, according to size, from $20 to $30 for docking, and from $50 to $100 for towing to sea.

Steam and Motor Ships.

(Charges based on net tonnage of vessel.)

1. Services of tug assisting to dock on city front	$25 00 to $40 00
2. Towing (without power) from dock to dock between Meiggs (Fisherman's) Wharf to Mission Rock	75 00 to 150 00
3. Services of tug assisting to Union Iron Works or Hunter's Point	40 00 to 70 00
4. Towing (without power) to Union Iron Works or Hunter's Point	90 00 to 225 00
5. Services of tug assisting to Oakland Harbor (East of Bridge at Webster street)	50 00 to 75 00
6. Towing (without power) to Oakland Harbor	100 00 to 250 00

PORT WARDEN.

Port Warden. Appointed by Governor.

Fees: $15 for each survey, but not to exceed $75 on any vessel; rates on foreign vessels 50 per cent greater; separate certificate of surveys required by different consignees, $2.50 each; $10 each order of sale.

Water Rates Now In Effect In The Port Of San Francisco.

Gallons—	*Cubic feet*	*New rate*
10,000	1,334	$15 70
20,000	2,667	19 54
30,000	4,000	23 12
50,000	6,667	29 84
100,000	13,334	46 64
200,000	26,667	80 24

UNITED STATES GOVERNMENT REGULATIONS, FEES AND OFFICIALS.

CUSTOMS DISTRICT.

The Customs District of the Port of San Francisco comprises all that portion of the State of California north of the county of Santa Barbara.

Custom House, located at Washington and Battery streets, San Francisco. Customs Officers: Collector of Customs, W. B. Hamilton; Assistant Collector of Customs, Henry E. Farmer; Surveyor of Customs, L. J. Flaherty; Assistant Surveyor of Customs, John T. Stone; Comptroller of Customs, John J. Deane; Appraiser of Customs, Bert Kahn.

CUSTOMS FEES.

The ordinary entrance fees for vessels arriving from foreign ports with cargo are $5.70 for foreign vessels and $2.70 for American vessels.

The ordinary clearance fees for vessels going to foreign ports, either American or foreign vessels, are $2.70.

Foreign vessels entering from a domestic port are charged a fee of $2; likewise a fee of $2 for clearing to a domestic port.

UNITED STATES INSPECTION OF STEAM VESSELS.

John K. Bulger, Customs House, Supervising Inspector First District.
Joseph P. Dolan, United States Local Inspector of Boilers.
Frank H. Turner, United States Local Inspector of Hulls.
Walter Macarthur, United States Shipping Commissioner, Appraiser's Building.

UNITED STATES IMMIGRATION SERVICE.

John D. Nagle, Commissioner of Immigration; offices: Angel Island and Appraiser's Building, San Francisco.

UNITED STATES QUARANTINE SERVICE.

Dr. R. H. Creel, Surgeon, United States Public Health Service, in charge; offices: Angel Island and Barge Office, Fisherman's Wharf, San Francisco.

The federal government handles the entire matter of inspection, quarantine and fumigation in this port. Where fumigation is required, the charge amounts to about thirteen cents per thousand cubic feet of air space fumigated, plus one dollar for supervision and two dollars labor. This applies where the operation is conducted at the Angel Island Station, but in cases where vessels are fumigated on the San Francisco side, the expenses of the fumigating officer amounting to hotel accommodations and incidental expenses are charged in addition to the above rate.

UNITED STATES LIGHTHOUSE SERVICE.

H. W. Rhodes, Inspector; office: Customs House.

UNITED STATES ATTORNEY.

Sterling Carr; office: Post Office Building.

UNITED STATES MARSHAL.

Fred Esola; office: Post Office Building.

UNITED STATES PASSPORT AGENCY.

William A. Newcome, Passport Agent; office: Custom House.

INTERNAL REVENUE DEPARTMENT.

John P. McLaughlin, Collector; office: Custom House.

UNITED STATES BUREAU OF FOREIGN AND DOMESTIC COMMERCE.

Leonard B. Gary, District Manager; office: Custom House.

UNITED STATES COAST GUARD SERVICE.

Captain J. M. Moore, Division Commander, Southern Division; office: Custom House.

LIFE SAVING DIVISION.

G. B. Lofberg, District Superintendent.

UNITED STATES NAVY.

Office: Twelfth Naval District, Custom House.

FEDERAL HORTICULTURAL SERVICE.

Office: Plant Quarantine, Ferry Building.

BOARDS OF STATE HARBOR COMMISSIONERS.

First Board—C. L. Taylor, appointed November 4, 1863; D. C. McRuer, appointed November 4, 1863; S. S. Tilton, appointed November 4, 1863.

Second Board—C. L. Taylor; S. S. Tilton; James Laidley, appointed November 6, 1865.

Third Board—S. S. Tilton; James Laidley; James H. Cutter, appointed November 4, 1867.

Fourth Board—James H. Cutter; John J. Mark, appointed December 6, 1869. Jasper O'Farrell, appointed January 15, 1870.

Fifth Board—John J. Marks; Jasper O'Farrell; Washington Bartlett, appointed June 23, 1870.

Sixth Board—John J. Marks; Jasper O'Farrell; John Rosenfeld, appointed November 29, 1871.

Seventh Board—John Rosenfeld; Jasper O'Farrell; Lewis Cunningham, appointed March 1, 1873.

Eighth Board—Lewis Cunningham; John Rosenfeld; Samuel Soule, appointed March 13, 1873.

Ninth Board—Lewis Cunningham; Samuel Soule; T. D. Mathewson, appointed June 5, 1873.

Tenth Board—Samuel Soule; T. D. Mathewson; D. C. McRuer, appointed April 21, 1874.

Eleventh Board—Wm. Blanding, appointed March 4, 1876; Bruce B. Lee, appointed March 4, 1876; A. M. Burns, appointed March 4, 1876. Frank McCoppin succeeded Burns, October 28, 1879.

Twelfth Board—Wm. Blanding; G. S. Evans, appointed January 27, 1880; Wm. A. Phillips, appointed March 4, 1880.

Thirteenth Board—Wm. Blanding; Wm. H. Knight, appointed November 23, 1882; Geo. S. Evans; Wm. A. Phillips.

Fourteenth Board—Wm. Irwin, appointed March 20, 1883, died March 1, 1886. A. C. Paulsell, appointed March 20, 1883; John H. Wise, appointed March 20, 1883.

Fifteenth Board—Frank McCoppin, appointed April 1, 1886; A. C. Paulsell; John H. Wise.

Sixteenth Board—William D. English, appointed March 13, 1887; A. C. Paulsell; John H. Wise.

Seventeenth Board—William D. English; A. C. Pausell; Charles O. Alexander, appointed March 13, 1889.

Eighteenth Board—William D. English; Charles O. Alexander; William H. Brown, appointed March 13, 1890.

Nineteenth Board—C. F. Bassett, appointed March 31, 1891; Charles O. Alexander; William H. Brown.

Twentieth Board—C. F. Bassett; William H. Brown; Dan T. Cole, appointed March 13, 1893.

Twenty-first Board—C. F. Bassett; Dan T. Cole; F. S. Chadbourne, appointed March 13, 1894.

Twenty-second Board—E. L. Colnon, appointed March 14, 1894; Dan T. Cole; F. S. Chadbourne.

Twenty-third Board—E. L. Colnon; F. S. Chadbourne; P. J. Harney, appointed March 20, 1897.

Twenty-fourth Board—E. L. Colnon; P. J. Harney; Rudolph Herold, Jr., appointed March 13, 1898.

Twenty-fifth Board—Paris Kilburn, appointed March 14, 1899; P. J. Harney; Rudolph Herold, Jr.

Twenty-sixth Board—Chas. H. Spear, appointed March 16, 1903; John C. Kirkpatrick; John D. Mackenzie.

Twenty-seventh Board—W. V. Stafford, appointed March 19, 1907; Henry J. Crocker; W. E. Dennison.

Twenty-eighth Board—W. V. Stafford; W. E. Dennison; P. S. Teller, appointed April 1, 1909.

Twenty-ninth Board—W. V. Stafford; P. S. Teller; George M. Hill, appointed January 7, 1911.

Thirtieth Board—Marshall Hale, appointed March 26, 1911; George M. Hill, J. J. Dwyer, appointed March 26, 1911.

Thirty-first Board—J. J. Dwyer; George M. Hill, died July 10, 1912; Thomas S. Williams, appointed July 27, 1911.

Thirty-second Board—J. J. Dwyer; Thomas S. Williams; John H. McCallum, appointed July 30, 1912.

Thirty-third Board—Arthur Arlett, appointed February 15, 1917; Thomas S. Williams; John H. McCallum.

Thirty-fourth Board—Arthur Arlett; John H. McCallum; Harry H. Cosgriff, appointed June 6, 1918.

Thirty-fifth Board—John H. McCallum; Harry H. Cosgriff; Miles Standish, appointed December 6, 1918.

Thirty-sixth Board—John H. McCallum; Harry H. Cosgriff; Frederick S. Moody, appointed March 1, 1920.

Thirty-seventh Board—Chas. H. Spear, appointed May 21, 1923; J. B. Sanford, appointed May 24, 1923; M. F. Cochrane, appointed August 1, 1923.

SEAWALL LOTS.

Property of State, Under Control of the Board of State Harbor Commissioners.
(See Map.)

Number	Area in square feet	Appraised valuation
A	584	$5,000 00
B	29,518	67,500 00
C	52,500	131,250 00
1	72,781	200,000 00
2	8,677	25,000 00
3	38,849	120,000 00
4	31,178	110,000 00
5	54,605	150,000 00
6	13,130	50,000 00
7	87,067	325,000 00
8	30,264	145,000 00
9	4,727	25,000 00
10	4,326	28,500 00
11	45,372	262,500 00
12	75,524	440,000 00
13	3,103	20,000 00
14	42,630	300,000 00
15	75,447	505,000 00
16	2,746	25,000 00
17	23,647	92,700 00
18	26,793	93,775 00
19	14,623	51,180 50
20	93,668	327,838 00
21	14,625	85,000 00
22	97,791	600,000 00
23	88,577	400,000 00
24	78,285	400,000 00
25	10,860	67,500 00

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State Civil Service Commission

STATE OF CALIFORNIA

SIXTH BIENNIAL REPORT

TO THE GOVERNOR

DECEMBER, 1924

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STATE CIVIL SERVICE COMMISSSION

STATE OF CALIFORNIA

SIXTH BIENNIAL REPORT TO THE GOVERNOR.

COMMISSIONERS.

DAVID J. REESE, *President and Executive Member*----------Ventura

JOHN F. GALVIN, *Associate Member*----------Richmond

CECILIA M. CHAMBERLAIN, *Associate Member*----------Greenville

NOVA J. BEAL,
Acting Chief Examiner.

LODEMA SHURTLEFF,
Secretary.

HISTORICAL REGISTER OF THE COMMISSION.

Commissioners (Old Statute).

CHARLES WESLEY REED,
Appointed August 12, 1913; served to July 29, 1921.

JAMES M. HUNTER,
Appointed August 12, 1913; resigned March 14, 1917.

EDGAR WILLIAMS,
Appointed August 12, 1913; served to July 29, 1921.

DAVID J. REESE,
Appointed March 14, 1917; served to July 29, 1921.

Commissioners (New Statute).

DAVID J. REESE, President and Executive Member,
Appointed July 30, 1921; term expires July 1, 1925.

EDGAR WILLIAMS,
Appointed July 30, 1921; resigned January 1, 1922.

CLYDE SEAVEY,
Appointed July 30, 1921; resigned January 4, 1923.

JOHN F. GALVIN,
Appointed January 1, 1922; term expires July 1, 1926.

CECILIA M. CHAMBERLAIN,
Appointed January 4, 1923; term expires July 1, 1924.

STATE CIVIL SERVICE COMMISSSION
STATE OF CALIFORNIA

SIXTH BIENNIAL REPORT TO THE GOVERNOR.

To His Excellency FRIEND WM. RICHARDSON,
Governor of the State of California,
State Capitol, Sacramento, California.

Subdivision eight, section five, of the Civil Service Act of California, provides that the Civil Service Commission shall:

> "Make a biennial report to the Governor for transmission to the legislature, showing the action of the Commission, including all the rules and regulations adopted by it during such period and those that are in force at the time of making such report, information as to the exempted positions as required by this act, and the effects of this act and of all proceedings under it, and any suggestions the Commission may deem practical for the more effectual accomplishment of this act."

In accordance with this provision of the law, the State Civil Service Commission has the honor to submit its sixth biennial report.

In addition to the presentation of the activities of the Commission during the present biennium, this report includes:

Appendix I—A table showing the status and number of employees in the state service, October 15, 1924.

Appendix II—A tabular statement of examinations held and results obtained during the biennium.

Appendix III—Financial statement for the seventy-fourth and seventy-fifth fiscal years.

Appendix IV—A list of persons who assisted in conducting examinations during the biennial period 1922–1924.

Appendix V—The Civil Service Act (chapter 590, 1913; chapter 654, 1919; chapters 577, 601, 1921; chapter 314, 1923).

Appendix VI—Rules and regulations of the Commission which were rewritten and adopted following the reorganization of the Commission, July 30, 1921, and as amended since that time and in force at the time of this report.

PROGRESS OF CIVIL SERVICE IN CALIFORNIA.

The State Civil Service Commission was created by act of the state legislature in 1913 (chapter 590, approved June 16, 1913). Under that legislative enactment a commission of three commissioners was authorized. The legislature of 1921 amended the Civil Service Act so as to provide for a commission of three commissioners, one of whom should be president and executive member of the Commission. The enactment of the original civil service laws by the legislature of 1913 committed

the citizens of California to an unqualified approval of the merit system as applied to the selection of competent employees for the service of the state; the reenactment of the law and the reorganization of the Commission in 1921 still further demonstrated the belief in the approval of the merit system by the people of the state; and the amendments of the legislature since that time have tended to strengthen and improve the provisions of the Civil Service Act rather than to impair them in any particular. The State of California is thus committed to the policy that it is necessary and is wise to recruit trained and capable employees for carrying on its increasingly important business. In a commonwealth where political patronage had controlled for years, civil service and the merit system were not received with any enthusiastic welcome at the time of the adoption of the act. But notwithstanding oppositions and attempted evasions, the foundations were laid for civil service direction and administration, and, although an ideally correct civil service system has not been attained and perhaps may never be, yet the results have demonstrated that the Civil Service Commission under the act has succeeded in building up and maintaining a new employment policy as an important part of the governmental machinery. With a change in the administration of state government since the filing of the fifth biennial report, many new heads of departments were installed. These, with but few exceptions, accepted the civil service policy and system then in effect and even where antagonisms did exist, such antagonisms were largely due to a misunderstanding of civil service provisions and procedure. The Civil Service Commission is pleased to report at this time that practically all departments of state government are not only working in full accord with the provisions of the Civil Service Act, but are lending assistance and cooperation in making civil service and the merit system more effective in bringing the best and most competent employment service to the state.

SUPPORT AND COOPERATION OF THE GOVERNOR.

In his inaugural message to the legislature and the people of this state, Honorable Friend Wm. Richardson, Governor of California, unequivocally expressed his attitude toward civil service in the following statement:

> "Civil Service has proved its worth, and the defects complained of are mainly those of administration. Civil Service to be truly appreciated must be contrasted with the old spoils system. Civil Service employees who become inefficient should be promptly recommended for discharge, as the state should be protected as well as the employees."

When the first opportunity came for the Governor to attest his faith by performance, he promptly approved the legislative act amending the Civil Service Act and granting to the Civil Service Commission the power to classify positions in the civil service and to grade all positions within each class with respect to salaries.

In its efforts to bring about better civil service procedure and to enforce the provisions of the Civil Service Act, the Commission has in every particular had the active and interested cooperation and support of the Governor, and in acknowledgment of the support it has received

this Commission avers that the harmony now existing between other state departments and the Civil Service Commission and the general acceptance of civil service by the state departments are due in a large measure to the Governor's belief in and endorsement of the merit system.

EFFICIENCY AND ECONOMY.

The establishment of civil service and the merit system in California has resulted not alone in bringing far greater efficiency to every state department under civil service jurisdiction, but it has also resulted in the saving of thousands of dollars to the state. Under the Civil Service Act now in effect the Commission is authorized to:

> "Classify positions to be held under state authority in accordance with the provisions of this act and in accordance with the duties attached to such positions. The Commission shall grade all positions within each class with respect to salaries, to the end that like salaries shall be paid for like duties."

After years of diligent effort, careful and earnest research and investigation, a scientific study of the public service in other states and municipalities, as well as of the personnel and employment service of private corporations in California and elsewhere, this Commission has established just and scientific salary standards for all positions under its jurisdiction and has made a proper classification of every position in the service. The salaries of all employees under civil service jurisdiction are based upon these standards and no employee is permitted to receive, nor is any department permitted to pay, a salary which does not conform to such standards. Furthermore, no salaries may be increased without the approval of the Commission and such salary increases must be in accord with the schedules established by the Commission under the law. All requests for increases in salary presented by department heads to this Commission for its approval are subject to careful consideration and investigation. The time and amount of the latest increase and the civil service status of the employee are carefully checked. Too frequent increases, except in emergency cases, are discouraged and are usually denied. The Commission has adopted the policy of refusing to accept requests for increases oftener than twice each year and has indicated the desirability of presenting such requests but once each year.

Following the selection of competent and capable employees for the service of the state, the Civil Service Commission believes that its greatest and most important function is the control and direction of the salary schedules for these employees. There has been and there can be no contradiction of the statement that the selection of employees under a competitive merit system and the compensation of these employees under the salary standardization schedules adopted by this Commission have resulted in the maximum of efficiency in service and in great saving to the state.

The Civil Service Act and the salary standardization rules adopted by this Commission not only act as a ban to indiscriminate increases in salary and thus result in great saving, but also to the denial of many proposed increases because of nonconformity to the schedules and other irregularities. By arrangement with the Department of Finance, all

matters of salaries after approval by the Civil Service Commission are referred to a conference of the two departments, which conference ascertains if such salaries are in accord with the appropriation and budget provisions for the department making the request.

PAY ROLL CONTROL.

Section 17 of the Civil Service Act provides that

> "it shall be unlawful for the controller or other fiscal officer of the state to draw, sign, issue, or authorize the drawing, signing, or issuing of any warrant on the treasurer or other disbursing officer of the state for the payment of, or for the treasurer or other disbursing officer to pay, any salary or compensation to any one holding any position under the provisions of this act unless the estimate, pay roll or account for such salary or compensation, containing the name of the person to be paid, shall bear the certificate of the Commission that the persons named in such estimate, pay roll or account are holding positions as provided by this act and the rules and regulations prescribed thereunder."

This provision of the statute has been undoubtedly the most potent of all the means of enforcing the law. The provision of the law requiring certification of pay rolls proves itself most valuable. Without such a provision, appointments might be made without strict observance of the civil service rules, and fiscal officers might at times be persuaded to pay compensation to those irregularly selected. Systematic presentation to the Civil Service Commission of all pay rolls, with careful scrutiny by such Commission, is necessary in order to maintain this important feature of the civil service law.

SCIENTIFIC EMPLOYMENT IN THE STATE SERVICE.

During the past few years the methods of selecting and placing employees have developed to the point where employment may well be spoken of as a science, and today the employment and personnel department is recognized as an essential part of every well organized business of any importance. Public business has also come to recognize that the selection and building up of an efficient working force is as essential to its success as to the success of private business. The Civil Service Commission may be said to bear the same relation to the efficiency of state government as the employment and personnel department bears to the success of a large business organization. In other words, through its earnest efforts to improve the methods of selecting employees for state service by establishing suitable entrance requirements and by setting salary standards which guarantee like pay for like work, the Commission feels that it has increased the efficiency of the state service by bringing into the service a higher type of employee, with a resultant higher type of service, by reducing costly labor turnover, and by systematic regulation of the compensation of employees.

INCREASE IN EXAMINATIONS.

In response to and in thorough accord with the expressed purpose of the Governor for economy and efficiency in state government, this Commission reduced its estimate for budget appropriation for the biennium

to the minimum for efficient administration and this budget appropriation was given prompt approval by the Governor. Notwithstanding a reduced appropriation and a consequent reduction in the examining division of this Commission, there has been no reduction in activity or in the work accomplished by the Commission. On the contrary, the biennial period has shown a marked increase in its work.

During the past two years the character and duties of 567 positions in the state service were considered and examinations were prepared for such positions. During the preceding biennial period, 498 positions were given consideration. During the past two years, also, 8895 persons have presented themselves for examination and their qualifications have been passed upon either by written or oral examinations, or by both. This is in comparison with 8610 applicants examined in the preceding biennial period, and is the largest number of applicants examined in any similar period in the history of the Commission.

The Commission is pleased to report in addition to the above that notwithstanding an increase in the number of employees in the civil service under the jurisdiction of this Commission within the last few years, it has been able, by reason of constant activity in examination work, to reduce the number of temporary authorization appointments from 3038 in November, 1922, to 2236 in October, 1924. The number of temporary authorizations today is less than ever before in the history of the Civil Service Commission.

TESTS ARE PRACTICAL.

The old impression among people generally that civil service examinations are neither practical nor fitted for the particular positions which applicants seek, no longer obtains to any large degree. Civil service procedure in this state has long since discarded the stilted, the academic and the strictly scholastic type of civil service examination. On the contrary, examinations, as now conducted by this Commission, are based upon the practical knowledge of the applicant for the position, and previous experience is given full weight in the rating of the competitors. Training for the particular work; education, general and special; and, so far as is possible, personal qualifications, are given full consideration. The Commission, in many examinations, has dispensed with the written test and has depended solely upon oral interviews, given by impartial boards, where education, training, experience and knowledge of the particular position and its duties, as shown by answers to oral questions, are the basis of the competitive rating.

In its endeavor to perfect its examination procedure and bring each examination to that point where it will accurately test the qualifications essential to success in a given position and eliminate all competitors who do not possess such qualifications, the Commission has been ably assisted by the Bureau of Public Personnel Administration of Washington, D. C. This bureau was organized through the efforts of the National Assembly of Civil Service Commissions for the purpose of developing standard tests for the various types of public service. In the short time since its inception, the bureau, as a result of its scientific experiment and research, has suggested improvements in examination methods which have already proved of great value, not only to this Commission, but to all other Civil Service Commissions as well.

The Civil Service Act and the rules of this Commission provide for promotional examinations for those employees, who by reason of length of service, efficiency and particular ability, have earned such promotion. This Commission is thoroughly in accord with such procedure and during the biennial period, at the request of department heads, has given many such examinations.

In practically all of its examinations this Commission has had the assistance and cooperation of some of the best qualified, most capable, and highest salaried men and women in California, most of whom are either in responsible positions with private corporations or who are managers or owners of great business enterprises themselves; and the services of these assistant examiners have been given to the Commission and to the state generously and gratuitously and often at great sacrifice on the part of these examiners. Due acknowledgment is made for this assistance in another part of this report.

EXAMINATIONS FOR POSITIONS OF HIGH SALARY.

Examinations for a large number of responsible positions carrying salary compensations considerably above the average have been included in the examinations for the biennial period. These examinations and the salary schedules therefor include the following:

Senior Accountant	$200-$265
Principal Accountant	275- 375
Bank Examiner, Grade 4	210- 265
Senior Bank Examiner, Grade 5	275- 415
General Buyer, Grade 4	225- 275
Chief Assistant Purchasing Agent	285- 300
Assistant Chemist, Grade 4	235- 280
Assistant to Chief, Division of Animal Industry	285- 315
Chief, Bureau of Cattle Brand Inspection	230- 275
Entomologist	230- 275
Horticulturist	230- 275
Supervising Dairy Inspector	225- 275
Supervising Fruit and Vegetable Standardization Inspector	230- 300
Chief Deputy Grain and Warehouse Inspector	230- 275
Chief Grain and Warehouse Inspector	275- 333 33
Supervising Quarantine Officer	230- 275
Seed Specialist	230- 275
Superintendent, Nursery Service	225- 275
Superintendent of Standardization	315- 333 33
Senior Field Veterinarian	230- 275
Viticultural Expert	230- 250
Principal Clerk	210- 275
Chief Deputy Clerk of the Supreme Court	250
Chief Examiner, Civil Service Commission	250- 325
Deputy, Corporation Department	225- 325
Director, Bureau of Child Hygiene, State Board of Health	300- 333 33
Epidemiologist	300- 333 33
Technical Editor, Highway Engineering	285- 350
Cost Expert, State Printing Office	200- 300
Senior Civil Engineering Draftsman	235- 280
Senior Architectural Draftsman	235- 280
Assistant Mechanical Engineering Draftsman	235- 280
Assistant Civil Engineer	235- 280
Assistant Mechanical Engineer	235- 280
Assistant Structural Engineer	235- 280
Associate Bridge Engineer	285- 350
Engineer, Estimates and Costs	285- 350
Associate Equipment Engineer, Highways	285- 350
Associate Highway Engineer	285- 350
Highway Engineer	300- 420
Assistant Safety Engineer, Mechanical	235- 280
Assistant Safety Engineer, Structural	235- 280
Associate Safety Engineer, Electrical	285- 350
Assistant Sanitary Engineer	235- 280

General Foreman, Composing Room, State Printing Office	$262 50
Assistant Executive Officer, Commission of Immigration and Housing	$250– 300
Senior Pay Roll Auditor, Compensation Insurance Fund	200– 275
Executive Special Agent, Compensation Insurance Fund	200– 275
Statistician	200– 275
Superintendent of Underwriting	200– 275
Superintendent of Safety Engineering and Inspection	235– 280
Superintendent of Claims	300– 375
Secretary, Compensation Insurance Fund	300– 375
Deputy Labor Commissioner	200– 225
Deputy State Mineralogist	300
Business Manager, State Hospitals	150-M–300-M
Assistant Physician, State Hospitals	170-M–270-M
Referee, Industrial Accident Commission	205– 250
Superintendent of Maintenance and Repair, Mechanical Equipment, Highways	220– 300
General Superintendent of Maintenance and Repair, Mechanical Equipment, Highways	300 and above

STANDARDIZATION AND CLASSIFICATION.

The Governor of this state, by his approval of the legislative amendment giving unqualified authority to the Civil Service Commission in the matter of salary standardization and employment classification, insured to the Commission unqualified and effective administration of its function.

Following the work already so well begun and strengthened by the amendment to the Civil Service Act, the Commission during this biennium has continued to improve and perfect the classification of the state service on the basis of the work performed and to establish specifications for each group of similar positions which make up the service. In its work it has had the helpful suggestion and cooperation of heads of departments. As the duties of department employees change in nature or increase in scope, adjustments in classification and salary schedules are necessary, and this Commission has been ready to grant such adjustments wherever and whenever justified.

The Civil Service Act provides (section 5) that the Civil Service Commission shall grade all positions within each class with respect to salaries, to the end that like salaries shall be paid for like duties. In its biennial report of December, 1922, this Commission stated, and it now desires to reiterate, that like salaries for like duties, or in other words, equal pay for equal work, seems so just a principle that it should be accepted without argument. There can be no "like salaries for like duties," however, in a governmental system where many positions are statutory both as to creation and salary, and where many positions are exempt by law and even whole departments are exempt. Overpay for one individual is a constant irritation to others and tends to impairment of service. It is useless, as well, to discuss equalization of pay for public employees without taking into consideration equal hours of service, equal working conditions, leaves of absence and similar factors.

There is a noticeable dissimilarity in these conditions in state employment, so noticeable, in fact, that this Commission, in connection with its classification and standardization work, has endeavored, without avail, by personal suggestion, to bring about uniformity in some particulars. In striking contrast to these conditions, however, is the situation in the state institutions where by reason of previous conferences with the Department of Institutions there is a uniformity of salaries based upon length of service and duties of position and a consequent harmony as a result.

EXEMPTIONS.

The Civil Service Act provides that any positions subject to the provisions of the act may be exempted from civil service by unanimous resolution of the three members of the Commission. During this biennial period and for the first time in the history of civil service in this state, no exemptions have been granted by the Commission.

CIVIL SERVICE PROCEDURE.

Procedure in the Civil Service Commission is governed by the laws and rules and regulations of the Commission. Some details of interest are:

1. Vacancies in positions in all state departments under civil service jurisdiction are reported to the Civil Service Commission, with request for certification.

2. Upon request for such certification, the Commission certifies to said department the names of the three highest available eligibles upon the list from which such certification must be made, or from "the eligible list most nearly appropriate for the position to be filled." Said department must select one from among the three certified.

3. In the absence of an eligible list, temporary authorization is issued for the appointment outside of civil service but such temporary authorization does not hold good for longer than three months.

4. In the absence of an eligible list the Commission at once proceeds to hold an examination, if practicable, and such examination is announced about thirty days before it is held. Applications must be filed a reasonable time before the examination.

5. Public announcement is made of all examinations, and such announcement must include information as to time and place, duties of position, salary and requirements.

6. Applications are made upon written blanks furnished by the Commission. It is the practice of the Commission to hold written examinations simultaneously in Sacramento, Los Angeles and San Francisco.

7. Papers are rated as quickly as possible after the examinations and as soon thereafter as is practicable, oral examinations are conducted by the Commission, assisted by competent examiners comprising an oral examining board. Following the oral examinations ratings based upon both oral and written tests are compiled and the eligible lists are issued and made public.

8. An eligible list continues in existence for at least one year.

9. Eligibles may waive certification for reasons considered satisfactory by the Commission.

10. To meet an actual emergency, any person, whether an eligible or not, may be appointed to serve for a period not exceeding fifteen days.

11. Every person appointed from an eligible list must serve a probationary period of six months. After that time the appointment becomes permanent and the appointee is entitled to all civil service rights.

12. Leaves of absence and sick leaves with or without pay must be submitted to and approved by the Commission before becoming effective.

13. Changes of status and salary must be submitted to and approved by the Commission before becoming effective.

REMOVAL OF INCOMPETENTS NOT RESTRICTED.

The Civil Service Act provides for six months' probationary service for any and all certified eligibles. When a department head retains a competitive appointee in service beyond that period he acknowledges by that retention the fitness of such appointee. The examinations of the Civil Service Commission are prepared and conducted for the purpose of selecting the employees best adapted for state service, but no examination, however thorough—scientifically or psychologically—can always reveal personal or temperamental unfitness of an applicant, and hence the wise provision of a six months' probationary service. The department head, in the absence of civil service regulations, and the private employer must take his employee on trial. If he selects such employee or retains him because of friendship or influence or favoritism, then he is not fair to his state or to his business. This being admitted, it must follow that the appointing power, which selects an employee from an eligible list, has the same opportunity to determine the fitness of the employee for the position as he would have in the absence of an eligible list. With every appointee under six months' probation before becoming a permanent civil service employee, there is ample time to discover any defects in such employee, and it is the duty of the appointing power not alone to supervise his employees during their probationary period, but also thereafter, as long as the employee continues his employment under that appointing power. The head of a department has full control over his employees. If they are inefficient or incompetent he can suspend them or dismiss them, the only modification of this power being that he must give them opportunity to answer the charges he must make and to be heard on such charges. The merit system is not responsible for the retention of incompetent employees; rather does it insist upon and provide for the elimination of such employees as demonstrate their unfitness, and the responsibility for the retention of an incompetent employee must be borne by the head of the department which that employee serves.

PENSION AND RETIREMENT.

In its 1922 biennial report this Commission referred to the pressing need for legislation providing for the pension and retirement of aged employees. Civil service and the merit system can not continue to function efficiently unless some such legislation be enacted. Civil service has been in existence for eleven years. Employees in the employ of the state at the time of its adoption were "blanketed into" the service. Many of the employees were then well along in years. Each succeeding year makes it more difficult to secure the maximum of efficiency from these aged employees. Unfortunately, there comes a time in the lives of men when they are not able to give the service required of them and which can be given by men younger and more physically able. These aged employees have all the rights which civil service gives them and they can only be removed by resignation or by the filing of charges. While efficiency may demand such action, there is a sentimental side which deters it. Efforts have been made in the past to secure passage by the legislature of an adequate pension and retirement system for state employees, but these efforts have failed.

Various municipalities have adopted liberal and effective pension and retirement legislation for members of the police and fire departments. The same arguments which have been presented in the interests of a liberal pension and retirement policy for public school teachers and for members of the police and fire departments in the municipalities apply with equal force to the rank and file of the state service. It is just as important that some adequate provision be made for the retirement of a clerk or technical employee grown old in the service as for any other public employee, and the early adoption of a comprehensive pension and retirement system is recommended. The adoption of such a policy on the part of the state for all public employees will be in keeping with the spirit of progressive government. It will not be expensive to maintain if established in accordance with correct principles, and will be of great value in promoting efficiency in the public service.

FOR GREATER EFFICIENCY AND ECONOMY.

The Civil Service Commission has no province nor is it concerned in the organization, administration or policy-fixing powers of any other department. It is concerned, however, in the policy of "like salaries for like duties" and it now respectfully recommends that steps be taken to establish a system whereby there may be uniformity of hours and duties.

The surveys which have been made by this Commission for the purpose of establishing new classifications and standardizing salaries, have demonstrated that there is duplication of work and of effort. It is imperative, if the state is to reduce its great expenditures, that the work of each department be accomplished with a minimum number of employees, and to that end the Civil Service Commission, because of information at hand and because of its survey of departments, is ready to offer cooperation and suggestion.

There is no good reason for the exemption from civil service of a large proportion of the civilian employees of the state. It has been shown that the merit system, with its classification of positions, its standardization of salaries and its certification of pay rolls, is working a financial saving to the state. Civil service is no longer an experiment in California. There is no longer a question as to the value of the application of the merit system to public employment control and this Commission believes that the civil service system should be extended to include, with some few exceptions, those departments which are now exempt under the laws by which they have been created, or which are exempt under the civil service law. The exceptions referred to would properly include the State University and normal schools and the public school system of the state.

In view of the need for economy in all branches of the public service the Commission recommends for your consideration the adoption of appropriate legislation which will include legislative employees under the classified service. The states of Wisconsin and New York have adopted such legislation. Wisconsin adopted the merit system for the selection of legislative employees several years ago, and as a result, the cost of such employees has been reduced to a figure far below that of any other state of similar size and importance.

NATIONAL CIVIL SERVICE ASSEMBLY.

The eighteenth annual convention of the National Civil Service Assembly will be held in Los Angeles, California, May 26 to 29, 1925, inclusive. It will be attended by delegates from all civil service jurisdictions in the United States, Canada, The Philippines, and probably England and the continent of Europe. California has been recognized not alone by the selection of Los Angeles as the convention city, but also by having the president of its State Civil Service Commission selected as president of the National Assembly.

The great objective of the National Assembly for a number of years past has been the organization of a central civil service bureau, to act as a clearing house for civil service procedure, to the end that every state, county and municipal commission in the United States may have the benefit of the best thought and most improved practice in handling the many problems that arise. The committee appointed for the purpose has elicited the interest and support of the ablest scientific thinkers of the nation as well as one of the foremost philanthropists of the day and has recently announced that the sum of $75,000 has been provided for a period of three years to cover every detail of investigation into civil service methods and procedure. Every civil service commission now in existence will directly benefit as a result of this great work and the merit system will be placed upon a more substantial basis than ever before in its history. It is respectfully urged that this Commission be provided funds to insure attendance and participation in the proceedings of the assembly convention and as well to retain its membership in the assembly.

RECOMMENDATIONS.

The annual pay roll of the State of California represents the greatest outlay of funds of the state, and inasmuch as the Civil Service Commission, in the discharge of its duties, is most intimately concerned with the content of that pay roll, it has tried to present with this report a brief review of its activities in connection with the state service. Through legislative enactment and through the cooperation and support of the Governor, the merit system has already advanced to a very gratifying degree in California, and it is with a desire to still further develop and perfect the system that the following recommendations and suggestions are made:

1. The extension of the civil service system to exempted departments of the state.
2. A survey of the departmental working forces that there may be a reorganization of such departments, where deemed advisable, to the end that there may be a minimum number of employees.
3. The adoption of a comprehensive and equitable pension and retirement system for civil service employees.
4. The inclusion of the civil service system as a part of the organic law of the state.
5. A careful analysis of all estimates for personal service by the budget officers, to the end that unequal statutory salaries may be eliminated and that all appropriations for salary and wage purposes may be based on the schedules adopted by the Civil Service Commission.
6. The placing of all legislative employees in the classified service.

CONCLUSION.

The State of California is the employer of one of the largest groups of individuals in the state and as such it has a right to demand of its employees the maximum of service and efficiency in the discharge of public business at a minimum expense. It is only when merit and fitness are made the basis for the selection of employees, as well as for their continuation and promotion in the service, that the state can be assured of the type of intelligent service to which it is entitled.

The present Civil Service Commission, all three members of which have served during your two years of office, desires in concluding this report to express its sincere appreciation of your hearty cooperation and support, and to officially record that never during your administration have you even suggested any deviation from a strict observance of the Civil Service Law.

Respectfully submitted.

STATE CIVIL SERVICE COMMISSION,
DAVID J. REESE,
President and Executive Member,
JOHN F. GALVIN,
CECILIA M. CHAMBERLAIN,
Associate Members.

December 29, 1924.

APPENDIX

RULES AND REGULATIONS

APPENDIX I.

Table Showing Status and Number of Employees in the Service of the State October 15, 1924.

Department	Exempt	Original employees	Taken from eligible lists	Appointed under temporary authorization	Totals
1. Accountancy, State Board of	5				5
2. Adjutant General	7				7
3. Advisory Pardon Board	6				6
4. Agricultural Society, State	13	1	1	16	31
5. Agricultural Association, Sixth District	10		4	8	22
6. Agriculture, Department of	11	4	177	344	536
7. Architecture, Board of	11		1		12
8. Attorney General	21	1	7	2	31
9. Banking Department	6	3	37	1	47
10. Building and Loan Commissioner	2	1	1		4
11. Charities and Corrections, Board of	4		7	2	13
12. Chiropractic Examiners, Board of	6				6
13. Civil Service Commission	3		15		18
14. Controller, State	11	7	30	5	53
15. Corporation Department, State	2		72	1	75
16. Court of Appeals, First District	12	1	4		17
17. Court of Appeals, Second District	13		4		17
18. Court of Appeals, Third District	6	2	2		10
19. Criminal Identification, Bureau of	4		9	3	16
20. Dental Examiners, Board of	7			2	9
21. Education, Department of:					
a. State Board of Education and Superintendent of Public Instruction	15		40	12	67
b. Schools for Deaf and Blind		8	25	14	47
c. Polytechnic School			7	9	16
22. Board of Equalization	7	3	6	1	17
23. Finance, Department of:					
a. State Board of Control	10	1	39	4	54
b. Division of Libraries	2	9	19	14	44
c. Division of Motor Vehicles	2		287	34	323
d. Napa State Farm		1	6	14	21
e. Division of Printing	1	43	88	22	154
f. Division of Purchases and Custody	4	23	88	5	120
24. Fish and Game Commission	4	42	23	119	188
25. Forestry, Board of	6		28	9	43
26. Harbor Commissioners, Board of State	8	127	241	47	423
27. Health, State Board of	11	7	53	34	105
28. Highway Commission, California	7	23	872	515	1,417
29. Institutions Department of:					
a. General Staff, Department of Institutions	1	2	4	1	8
b. Agnews State Hospital	5	29	141	42	217
c. Mendocino State Hospital	3	20	92	40	155
d. Napa State Hospital	6	55	184	86	331
e. Norwalk State Hospital	5		75	59	139
f. Sonoma State Home	4	23	125	62	214
g. Southern California State Hospital	4	27	207	69	307
h. Stockton State Hospital	6	57	201	74	338
i. California School for Girls	8		22	31	61
j. Industrial Farm for Women			1		1
k. Industrial Home for Adult Blind	5	1	17	14	37
l. Preston School of Industry	5	6	31	65	107
m. Whittier State School	4	1	14	53	72
30. Insurance Commissioner	2	2	12	7	23
31. Labor and Industrial Relations, Department of:					
a. Division of Workmen's Compensation Insurance and Safety:					
1. Compensation Insurance Fund	8		241	96	345
2. Industrial Accident Commission	8	3	72	9	92
b. Division of Immigration and Housing	6		15	3	24
c. Division of Industrial Welfare	5		10	7	22
d. Division of Labor	3	3	58		64
32. Land Settlement Board, State	5		3	15	23
33. Legislative Counsel Bureau	3		1		4
34. Medical Examiners, Board of	12		6	2	20
35. Mining Bureau, State	10	1	28	24	63
36. Pharmacy, State Board of	8	1	4	5	18
37. Prison Directors, Board of	12				12
38. Public Works, Department of:					
a. Division of Architecture	1	5	61	130	197
b. Division of Engineering and Irrigation	1	3	30	21	55
c. Division of Water Rights	6		38	18	62
39. Real Estate Department	2		43	1	46

APPENDIX I—Continued.

Table Showing Status and Number of Employees in the Service of the State October 15, 1924.

Department	Exempt	Original employees	Taken from eligible lists	Appointed under temporary authorization	Totals
40. Reclamation Board	9	1	13	4	27
41. Redwood Park Commission, California	4	1	1	9	15
42. Secretary of State	3	14	7	1	25
43. Supreme Court of California	23	5	10	.....	38
44. Surveyor General	3	3	3	1	10
45. State Treasurer	3	4	2	3	12
46. Veterans' Home of California	8	9	42	39	98
47. Veterans' Welfare Board	22	.....	6	1	29
48. Women's Relief Corps Home	7	.....	.....	7	14
Totals	467	583	4,013	2,236	7,299
					467
Under civil service jurisdiction	.....	.....	.....	.....	6,832

APPENDIX II.

Tabular Statement of Examinations Held and Results Obtained During Period From July 1, 1922, to July 1, 1923.

	Kind of examination	Date	Number of applicants		Number examined		Per cent examined, men and women	Number passed		Per cent passed		Total per cent passed, men and women	Number failed		Per cent failed		Total per cent failed, men and women
			Men	Women	Men	Women		Men	Women	Men	Women		Men	Women	Men	Women	
1.	Accountant	Aug. 12, 1922	77		70		90.9	22		31.0		31.0	48		69.0		69.0
2.	Addressograph operator	July 29, 1922		9		7	77.7		7		100.0	100.0					
3.	Agent, special, Industrial Welfare Commission	Aug. 5, 1922		34		31	91.2		10		32.0	32.0		21		68.0	68.0
4.	Agent, Bureau of Labor Statistics	Sept. 2, 1922	17	12	15	12	93.0	3	2	20.0	17.0	18.5	12	10	80.0	83.0	81.5
5.	Analyst, seed, Grade 2	Dec. 2, 1922	2		2		100.0	1		50.0		50.0	1		50.0		50.0
6.	Assistant to Chief, Division of Animal Industry, Grade 5	Dec. 2, 1922	7		5		71.4	3		60.0		60.0	2		40.0		40.0
7.	Attendant	July 15, 1922	6	4	1	2	30.0						1	2	100.0	100.0	100.0
8.	Attendant	Aug. 24, 1922	3	2	2	1	60.0	2	1	100.0	100.0	100.0					
9.	Attendant	May 5, 1923	1	5													
10.	Attendant, Agnews	July 15, 1922	21	26	18	22	85.1	14	19	78.0	87.0	82.5	4	3	22.0	13.0	17.5
11.	Attendant, Mendocino	July 15, 1922	8	13	6	12	85.7	3	12	50.0	100.0	83.3	3		50.0		16.7
12.	Attendant, Napa	July 15, 1922	33	22	31	22	96.3	30	19	97.0	87.0	92.0	1	3	3.0	13.0	8.0
13.	Attendant, Norwalk	July 15, 1922	19	18	17	16	89.2	17	16	100.0	100.0	100.0					
14.	Attendant, Patton	July 15, 1922	29	29	29	28	98.2	27	28	93.0	100.0	97.4	2		7.0		2.6
15.	Attendant, Sonoma	July 15, 1922	8	9	6	8	82.3	6	8	100.0	100.0	100.0					
16.	Attendant, Stockton	July 15, 1922	35	19	32	18	92.5	26	16	81.0	89.0	84.0	6	2	19.0	11.0	16.0
17.	Attendant, Veterans' Home	July 15, 1922		1		1	100.0		1		100.0	100.0					
18.	Attendant, Agnews	May 5, 1923	24	27	18	24	82.3	17	23	94.4	95.8	95.2	1	1	5.6	4.2	4.8
19.	Attendant, Mendocino	May 5, 1923	9	2	8	2	90.9	5	1	62.5	50.0	60.0	3	1	37.5	50.0	40.0
20.	Attendant, Napa	May 5, 1923	34	21	34	20	98.0	30	19	88.2	95.5	90.7	4	1	11.8	5.0	9.3
21.	Attendant, Norwalk	May 5, 1923	20	23	16	18	61.8	16	18	100.0	100.0	100.0					
22.	Attendant, Sonoma	May 5, 1923	15	20	12	18	85.7	12	18	100.0	100.0	100.0					
23.	Attendant, Patton	May 5, 1923	36	34	32	33	92.8	31	33	96.6	100.0	98.4	1		3.4		1.6
24.	Attendant, Stockton	May 5, 1923	34	20	29	17	85.1	28	16	96.6	94.1	95.6	1	1	3.4	5.9	4.4
25.	Auditor, State Corporation Department, Grade 4	Mar. 10, 1923	38		35		92.1	13		37.0		37.0	22		63.0		63.0
26.	Baker	July 15, 1922	4		4		100.0	3		75.0		75.0	1		25.0		25.0
27.	Baker	May 5, 1923	7		6		85.8	5		83.3		83.3	1		16.7		16.7
28.	Bindery worker	Oct. 28, 1922		1		1	100.0		1		100.0	100.0	100.0				
29.	Bindery worker	June 9, 1923		11		10	90.9		8		80.0	80.0		2		20.0	20.0
30.	Bindery worker, apprentice	Oct. 28, 1922		5		5	100.0		5		100.0	100.0					
31.	Bindery worker, apprentice	June 9, 1923		4		4	100.0		3		75.0	75.0		1		25.0	25.0
32.	Blacksmith	Oct. 28, 1922	15		13		86.7	5		38.0		38.0	8		62.0		62.0
33.	Blacksmith	Oct. 28, 1922	1														
34.	Boilermaker	Oct. 28, 1922	5		4		80.0	4		100.0		100.0					
35.	Bookbinder (forwarder)	Oct. 28, 1922	5		4		80.0	2		50.0		50.0	2		50.0		50.0

36.	Bookbinder (general)	June 9, 1923		1		1	100.0							1		100.0	100.0
37.	Bookbinder (machine)	Oct. 28, 1922	1		1		100.0	1		100.0		100.0					
38.	Bookbinder (machine)	June 9, 1923	1		1		100.0						1		100.0		100.0
39.	Bookbinder (apprentice)	June 9, 1923	2		2		100.0	2		100.0		100.0					
40.	Bookkeeper	Aug. 5, 1922	12	16	7	13	71.4	1	1	14.1	7.7	10.0	6	12	85.9	92.3	90.0
41.	Bookkeeper	Nov. 4, 1922	16	27	9	23	74.4	3	3	33.3	13.0	18.7	6	20	66.7	87.0	81.3
42.	Bookkeeper (woman)	Dec. 16, 1922		6		6	100.0		2		33.3	33.3		4		66.7	66.7
43.	Bookkeeper	Feb. 3, 1923	34	13	25	11	76.5	8		32.0		22.4	17	11	68.0	100.0	77.6
44.	Bookkeeper	May 5, 1923	11	16	8	11	70.3	5	3	62.5	27.0	42.1	3	8	37.5	73.0	57.9
45.	Book repairer	Oct. 28, 1922		1		1	100.0							1		100.0	100.0
46.	Bricklayer	Oct. 28, 1922	2		2		100.0	2		100.0		100.0					
47.	Bridgetender	Oct. 28, 1922	7		3		42.8	1		33.3		33.3	2		66.7		66.7
48.	Butcher	July 15, 1922	2		2		100.0	1		50.0		50.0	1		50.0		50.0
49.	Butcher	May 5, 1923	1		1		100.0	1		100.0		100.0					
50.	Buyer, general, Grade 4 (promotional)	Jan. 27, 1923	1		1		100.0	1		100.0		100.0					
51.	Captain, tugs and dredgers	Oct. 28, 1922	3		3		100.0	3		100.0		100.0					
52.	Carpenter (helper)	Oct. 28, 1922	5		2		40.0	2		100.0		100.0					
53.	Carpenter (journeyman)	Oct. 28, 1922	15		8		53.3	6		75.0		75.0	2		25.0		25.0
54.	Carpenter (foreman)	Oct. 28, 1922	6		5		83.3	4		80.0		80.0	1		20.0		20.0
55.	Cashier, Division of Motor Vehicles (promotional)	May 26, 1923	1	9		9	90.0							9		100.0	100.0
56.	Cement finisher	Oct. 28, 1922	1														
57.	Chauffeur	Oct. 28, 1922	25		11		44.0	3		27.0		27.0	8		73.0		73.0
58.	Chauffeur	May 5, 1923	1		1		100.0	1		100.0		100.0					
59.	Chemist, junior, Grade 3	Dec. 2, 1922	8		8		100.0	7		87.5		87.5	1		12.5		12.5
60.	Chemist, assistant, Grade 4	Dec. 2, 1922	4		3		75.0	3		100.0		100.0					
61.	Chief, Bureau of Cattle Brand Inspection, Department of Agriculture	Dec. 2, 1922	6		5		83.3	3		60.0		60.0	2		40.0		40.0
62.	Clerical aid	Nov. 25, 1922	15	146	15	133	91.9	8	52	53.0	39.0	40.5	7	81	47.0	61.0	59.5
63.	Clerical aid	Dec. 9, 1922	70	148	51	133	84.4	20	73	39.0	55.0	50.5	31	60	61.0	45.0	49.5
64.	Clerical aid	Apr. 21, 1923	22	50	17	40	79.1	13	27	76.0	68.0	70.2	4	13	24.0	32.0	29.8
65.	Clerk, brand	Dec. 2, 1922	4	2	3	2	83.3	2	2	66.7	100.0	80.0	1		33.3		20.0
66.	Clerk, Chief, Division of Motor Vehicles (promotional)	May 26, 1923	3	4	3	3	85.7	1	1	33.3	33.3	33.3	2	2	66.7	66.7	66.7
67.	Clerk, junior (men)	Dec. 9, 1922	138		105		76.0	39		37.0		37.0	66		63.0		63.0
68.	Clerk, principal, Department of Public Works (promotional)	Dec. 16, 1922	4		4		100.0	1		25.0		25.0	3		75.0		75.0
69.	Clerk, principal, Insurance Department (promotional)	June 25, 1923		3		3	100.0		3		100.0	100.0					
70.	Clerk, senior, Industrial Accident Commission (promotional	Sept. 16, 1922		2		1	50.0		1		100.0	100.0					
71.	Clerk, senior, Division of Motor Vehicles (promotional)	June 23, 1923	1	14	1	14	100.0	1	6	100.0	42.8	46.6		8		57.2	53.4
72.	Clerk, senior, Fish and Game Commission (promotional)	June 30, 1923	2	1	1	1	66.7		1		100.0	50.0	1		100.0		50.0
73.	Clerk, senior credential	Jan. 20, 1923	1	6	1	4	71.4	1	3	100.0	75.0	80.0		1		25.0	20.0
74.	Clerk-Stenographer, Banking Department	June 16, 1923		2		2	100.0		2		100.0	100.0					
75.	Compositor	June 9, 1923	4		3		75.0	3		100.0		100.0					
76.	Complaint officer, Grade 2 (promotional)	July 31, 1922	2		2		100.0	2		100.0		100.0					
77.	Complaint officer, Grade 2	Oct. 28, 1922	9		7		78.0	5		71.0		71.0	2		29.0		29.0
78.	Compositor	Oct. 28, 1922	39		32		82.0	17		53.0		53.0	15		47.0		47.0
79.	Compositor (apprentice)	Oct. 28, 1922	1		1		100.0	1		100.0		100.0					
80.	Cook	July 15, 1922	10	10	9	9	90.0	7	6	78.0	67.0	72.2	2	3	22.0	33.0	27.8
81.	Cook	May 5, 1923	29	6	22	5	77.1	18	5	82.0	100.0	85.2	4		18.0		14.8
82.	Copyholder	Oct. 28, 1922		1		1	100.0							1		100.0	100.0
83.	Copyholder	June 9, 1923		4		2	50.0		1		50.0	50.0		1		50.0	50.0

APPENDIX II—Continued.

Tabular Statement of Examinations Held and Results Obtained During Period From July 1, 1922, to July 1, 1923.

Kind of examination	Date	Number of applicants		Number examined		Per cent examined, men and women	Number passed		Per cent passed		Total per cent passed, men and women	Number failed		Per cent failed		Total per cent failed, men and women
		Men	Women	Men	Women		Men	Women	Men	Women		Men	Women	Men	Women	
84. Copyholder (apprentice)	Oct. 28, 1922	1	4		4	80 0		3		75 0	75 0		1		25 0	25 0
85. Copyholder (apprentice)	June 9, 1923		1		1	100 0		1		100 0	100 0					
86. Cost expert, State Printing Office	Apr. 21, 1923	2		2		100 0						2		100 0		100 0
87. Dairy bacteriologist, Grade 3	Nov. 18, 1922	2		2		100 0	1		50 0		50 0	1		50 0		50 0
88. Dairyman	July 15, 1922	6		6		100 0	5		83 3		83 3	1		16 7		16 7
89. Dairyman	May 5, 1923	4		3		75 0	3		100 0		100 0					
90. Decision writer, Industrial Accident Commission	Oct. 28, 1922	23	1	21	1	91 7	16	1	76 2	100 0	77 3	5		23 8		22 7
91. Deckhand	Oct. 28, 1922	5		4		80 0	4		100 0		100 0					
92. Deckhand	June 9, 1923	1		1		100 0	1		100 0		100 0					
93. Delineator, Grade 3	May 26, 1923	5	1	4	1	83 0	1		25 0		20 0	3	1	75 0	100 0	80 0
94. Deputy, State Real Estate Department	Sept. 8, 1922	104	14	91	12	87 3	29	5	31 3	41 7	33 1	62	7	68 7	58 3	66 9
95. Deputy, State Real Estate Department, Grade 2 (promotional)	Sept. 8, 1922		1		1	100 0		1		100 0	100 0					
96. Deputy, State Corporation Department	Nov. 4, 1922	86		78		90 0	24		31 0		31 0	54		69 0		69 0
97. Deputy, chief, Division of Weights and Measures, Department of Agriculture	Jan. 6, 1923	4		4		100 0	1		25 0		25 0	3		75 0		75 0
98. Deputy, chief, Division Weights and Measures, Department of Agriculture	Mar. 15, 1923	7		6		85 7	4		66 7		66 7	2		33 3		33 3
99. Detective, Department of Agriculture	Dec. 2, 1922	7		6		85 7	2		33 3		33 3	4		66 7		66 7
100. Dictaphone operator	Nov. 25, 1922	2	9	2	9	100 0		9		100 0	81 8	2		100 0		18 2
101. Dietician	July 15, 1922		1		1	100 0		1		100 0	100 0					
102. Dietician	May 5, 1923	2		2		100 0	2		100 0		100 0					
103. Director, Bureau of Child Hygiene, State Board of Health	Aug. 19, 1922	1	7	1	7	100 0		3		42 9	37 5	1	4	100 0	57 1	62 5
104. Dormitory nightwatch, California School for Girls	Aug. 25, 1922		2		2	100 0		1		50 0	50 0		1		50 0	50 0
105. Draftsman, junior, Grade 1	May 26, 1923	18	1	14	1	79 0	11	1	79 0	100 0	80 0	3		21 0		20 0
106. Draftsman, assistant civil engineering, Grade 2	May 26, 1923	18	1	12		63 0	1		8 0		8 0	11		92 0		92 0
107. Draftsman, assistant civil engineering, Grade 2 (promotional)	May 19, 1923	1		1		100 0	1		100 0		100 0					
108. Draftsman, civil engineering, Grade 3	May 26, 1923	28		23		82 0	7		30 4		30 4	16		69 6		69 6
109. Draftsman, senior civil engineering, Grade 4	May 26, 1923	12		11		92 0						11		100 0		100 0
110. Editor, technical, highway engineering	June 23, 1923	3		3		100 0						3		100 0		100 0
111. Electrician	July 15, 1922	2		2		100 0						2		100 0		100 0
112. Electrician	May 5, 1923	5		4		80 0	4		100 0		100 0					
113. Elevator operator	Oct. 28, 1922	5		3		60 0	3		100 0		100 0					
114. Engineering aid, junior, Grade 1	May 19, 1923	77		50		64 9	50		100 0		100 0					

115.	Engineering aid, civil, Grade 2	May 19, 1923	72		50		69.4	45		90.0		90.0	5		10.0		10.0
116.	Engineering aid, civil, Grade 2 (promotional)	May 19, 1923	2		2		100.0	2		100.0		100.0					
117.	Engineer, junior civil, Grade 3	May 19, 1923	81		62		76.4	50		80.6		80.6	12		19.4		19.4
118.	Engineer, junior civil, Grade 3 (promotional)	May 19, 1923	3		3		100.0	3		100.0		100.0					
119.	Engineer, assisitant civil, Grade 4	May 19, 1923	64		52		81.2	13		25.0		25.0	39		75.0		75.0
120.	Engineer, assistant civil, Grade 4 (promotional)	May 19, 1923	7		7		100.0	7		100.0		100.0					
121.	Engineer, junior equipment, highways, Grade 3	July 31, 1922	11		11		100.0	5		45.5		45.5	6		54.5		54.5
122.	Engineer, associate, equipment, highways, Grade 5	July 31, 1922	7		7		100.0	2		28.6		28.6	5		71.4		71.4
123.	Engineer, associate highway, Grade 5	June 23, 1923	72		68		94.4	21		30.8		30.8	47		69.2		69.2
124.	Engineer, associate highway, Grade 5 (promotional)	June 23, 1923	2		2		100.0	2		100.0		100.0					
125.	Engineer, highway, Grade 6	June 23, 1923	32		28		87.5	3		10.7		10.7	25		89.3		89.3
126.	Engineer, associate safety (electrical) Grade 5 (promotional)	Oct. 15, 1922	1		1		100.0	1		100.0		100.0					
127.	Engineer, junior safety (mechanical) Grade 3	Nov. 1, 1922	12		11		91.7	3		27.3		27.3	8		72.7		72.0
128.	Engineer, assistant safety (mechanical) Grade 4	Nov. 1, 1922	9		9		100.0	1		11.1		11.1	8		88.9		88.9
129.	Engineer, assistant safety (structural) Grade 4 (promotional)	Jan. 27, 1923	1		1		100.0	1		100.0		100.0					
130.	Engineering aid, junior sanitary, Grade 1	Dec. 23, 1922	2		1		50.0	1		100.0		100.0					
131.	Engineering aid, sanitary, Grade 2	Dec. 23, 1922	8		5		62.5	1		20.0		20.0	4		80.0		80.0
132.	Engineer, junior sanitary, Grade 3	Dec. 23, 1922	12		10		83.3	6		60.0		60.0	4		40.0		40.0
133.	Engineer, assistant sanitary, Grade 4	Dec. 23, 1922	13		12		92.3	9		75.0		75.0	3		25.0		25.0
134.	Engineman, hoist (locomotive)	Oct. 28, 1922	2		1		50.0	1		100.0		100.0					
135.	Engineman, hoist (locomotive)	June 9, 1923	3		2		66.7	1		50.0		50.0	1		50.0		50.0
136.	Engineman, marine	Oct. 28, 1922	10		7		70.0	6		85.7		85.7	1		14.3		14.3
137.	Engineman (piledriver)	Oct. 28, 1922	4		4		100.0	4		100.0		100.0					
138.	Engineman and pilot (motor boat)	Oct. 28, 1922	3		2		66.7	1		50.0		50.0	1		50.0		50.0
139.	Engineman, stationary	July 15, 1922	12		9		75.0	3		33.3		33.3	6		66.7		66.7
140.	Engineman, stationary	May 5, 1923	19		15		78.9	13		86.7		86.7	2		13.3		13.3
141.	Engineman, assistant, California School for Girls	Aug. 25, 1922	1		1		100.0	1		100.0		100.0					
142.	Engineman, hoist (stationary)	Oct. 28, 1922	6		3		50.0	1		33.3		33.3	2		66.7		66.7
143.	Entomologist, assistant, Grade 3	Dec. 2, 1922	2		2		100.0	2		100.0		100.0					
144.	Entomologist, Grade 4	Dec. 2, 1922	3		2		66.7	2		100.0		100.0					
145.	Examiner, bank	Apr. 28, 1923	105	4	88	2	82.6	55		62.5		61.1	33	2	37.5	100.0	38.9
146.	Examiner, Chief, Civil Service Commission	June 16, 1923	7	1	6	1	87.5	3	1	50.0	100.0	53.1	3		50.0		46.9
147.	Examiner, State Corporation Department	Nov. 4, 1922	58		53		91.0	27		51.0		51.0	26		49.0		49.0
148.	Executive officer, assistant, Commission of Immigration and Housing	June 25, 1923	2		2		100.0	2		100.0		100.0					
149.	Farmer	July 15, 1922	9		7		78.0	6		86.0		86.0	1		14.0		14.0
150.	Farmer	May 5, 1923	5		3		60.0	1		33.3		33.3	2		66.7		66.7
151.	Farmhand	July 15, 1922	19		16		84.0	10		62.5		62.5	6		37.5		37.5
152.	Farmhand	May 5, 1923	18		15		83.3	15		100.0		100.0					
153.	Farmhand, California School for Girls	Aug. 25, 1922	1		1		100.0	1		100.0		100.0					
154.	Fireman, locomotive	Oct. 28, 1922	14		10		71.4	4		40.0		40.0	6		60.0		60.0
155.	Fireman, locomotive	June 9, 1923	5		1		20.0						1		100.0		100.0
156.	Fireman, marine	Oct. 28, 1922	6		4		66.7	3		75.0		75.0	1		25.0		25.0
157.	Fireman, stationery	July 15, 1922	7		6		85.7	5		83.3		83.3	1		16.7		16.7
158.	Fireman, stationary	May 5, 1923	14		10		71.4	8		80.0		80.0	2		20.0		20.0
159.	Fireman and chauffeur, California School for Girls	Aug. 25, 1922	1		1		100.0	1		100.0		100.0					
160.	Fire ranger, district	Jan. 2, 1923	16		14		87.5	7		50.0		50.0	7		50.0		50.0
161.	Forelady of bindery	Nov. 25, 1922		1		1	100.0		1		100.0	100.0					
162.	Foreman of composing room, general	Nov. 25, 1922	8		7		87.5	4		57.0		57.0	3		43.0		43.0

APPENDIX II—Continued.

Tabular Statement of Examinations Held and Results Obtained During Period From July 1, 1922, to July 1, 1923.

	Kind of examination	Date	Number of applicants		Number examined		Per cent examined, men and women	Number passed		Per cent passed		Total per cent passed, men and women	Number failed		Per cent failed		Total per cent failed, men and women
			Men	Women	Men	Women		Men	Women	Men	Women		Men	Women	Men	Women	
163.	Foreman of the presseroom, assistant	Nov. 25, 1922	3		3		100.0	1		33.3		33.3	2		66.7		66.7
164.	Foreman of maintenance and repair, general, mechanical equipment, highways	Nov. 18, 1922	43		39		90.7	5		12.8		12.8	34		87.2		87.2
165.	Foreman of maintenance and repair, general, mechanical equipment, highways	June 30, 1923	3		2		66.7						2		100.0		100.0
166.	Gardener	July 15, 1922	1														
167.	Gardener, floral	July 15, 1922	4		3		75.0	1		33.3		33.3	2		66.7		66.7
168.	Gardener, floral	May 5, 1923	13		9		69.2	8		89.0		89.0	1		11.0		11.0
169.	Gardener, vegetable	July 15, 1922	5		4		80.0	4		100.0		100.0					
170.	Gardener, vegetable	May 5, 1923	5		4		80.0	3		75.0		75.0	1		25.0		25.0
171.	Handyman	July 15, 1922	7		5		71.7	3		60.0		60.0	2		40.0		40.0
172.	Handyman	May 5, 1923	6		5		83.3	3		60.0		60.0	2		40.0		40.0
173.	Handyman, California School for Girls	Aug. 25, 1922	1		1		100.0	1		100.0		100.0					
174.	Hollerith key punch operator	Oct. 28, 1922		2	1	2	100.0		1		50.0	50.0		1		50.0	50.0
175.	Hollerith tabulating machine operator	Oct. 28, 1922	1	1	1	1	100.0	1	1	100.0	100.0	100.0					
176.	Horticulturist, Grade 4	Dec. 9, 1922	3		3		100.0	3		100.0		100.0					
177.	Housefather (Preston)	Aug. 5, 1922	2		1		50.0	1		100.0		100.0					
178.	Housekeeper	July 15, 1922		8		6	75.0		4		66.7	66.7		2		33.3	33.3
179.	Housekeeper	May 5, 1923		3		2	66.7		2		100.0	100.0					
180.	Housemother (Preston)	Aug. 5, 1922		15		13	87.0		9		69.2	69.2		4		30.8	30.8
181.	Housemother (Whittier)	Aug. 5, 1922		3		3	100.0		3		100.0	100.0					
182.	Hydrotherapist	July 15, 1922	2	1	2	1	100.0	2		100.0		66.7		1		100.0	33.3
183.	Hydrotherapist, California School for Girls	Aug. 25, 1922		1		1	100.0		1		100.0	100.0					
184.	Hydrotherapist and masseur	May 5, 1923	1	2	1	2	100.0	1	1	100.0	50.0	66.7		1		50.0	33.3
185.	Inspector, apple packing, Grade 2	Dec. 2, 1922	2		2		100.0						2		100.0		100.0
186.	Inspector, brand	Dec. 2, 1922	11		9		81.9	8		88.9		88.9	1		11.1		11.1
187.	Inspector	Nov. 18, 1922	12		8		66.7	2		25.0		25.0	6		75.0		75.0
188.	Inspector, dairy, Grade 2	Nov. 18, 1922	15		14		93.3	11		79.0		79.0	3		21.0		21.0
189.	Inspector, dairy, senior, Grade 3	Nov. 18, 1922	6		6		100.0	2		33.3		33.3	4		66.7		66.7
190.	Inspector, dairy, supervising, Grade 4	Nov. 18, 1922	2		2		100.0	1		50.0		50.0	1		50.0		50.0
191.	Inspector, economic poisons and fertilizers	Dec. 2, 1922	4		4		100.0	3		75.0		75.0	1		25.0		25.0
192.	Inspector, senior, economic poisons and fertilizers	Dec. 2, 1922	4		4		100.0	3		75.0		75.0	1		25.0		25.0
193.	Inspector, elevator	July 1, 1922	11		6		55.5	2		33.3		33.3	4		66.7		66.7
194.	Inspector, factory, Grade 3	Nov. 18, 1922	9		8		88.9	4		50.0		50.0	4		50.0		50.0
195.	Inspector, State Board of Forestry (promotional)	Jan 2, 1923	13		9		69.2	7		77.8		77.8	2		22.2		22.2

196.	Inspector, junior fruit and vegetable standardization, Grade 2	Dec. 2, 1922	5		4		80.0	2		50.0		50.0	2		50.0		50.0
197.	Inspector, fruit and vegetable standardization, Grade 3	Dec. 2, 1922	23		21		91.3	18		85.6		85.6	3		14.4		14.4
198.	Inspector, supervising furit and vegetable standardization, Grade 4	Dec. 2, 1922	7		7		100.0	7		100.0		100.0					
199.	Inspector, grain, Grade 3	Dec. 2, 1922	2		2		100.0	2		100.0		100.0					
200.	Inspector, chief deputy, grain, Grade 4	Dec. 2, 1922	3		3		100.0	2		66.7		66.7	1		33.3		33.3
201.	Inspector, chief, grain and warehouse, Grade 5	Dec. 2, 1922	1		1		100.0	1		100.0		100.0					
202.	Inspector, housing, Grade 2	Oct. 31, 1922	39		31		79.5	9		29.0		29.0	22		71.0		71.0
203.	Inspector, market milk	Nov. 18, 1922	6		6		100.0	2		33.3		33.3	4		66.7		66.7
204.	Inspector, meat, Grade 2	Dec. 2, 1922	3		3		100.0	1		33.3		33.3	2		66.7		66.7
205.	Inspector, quarantine, Grade 2	Dec. 2, 1922	23		19		82.6	16		84.0		84.0	3		16.0		16.0
206.	Inspector, seed, Grade 2	Dec. 2, 1922	4		3		75.0	2		66.7		66.7	1		33.3		33.3
207.	Inspector, sheep	Dec. 2, 1922	5		4		80.0	3		75.0		75.0	1		25.0		25.0
208.	Janitor	Oct. 28, 1922	41		30		73.0	18		60.0		60.0	12		40.0		40.0
209.	Janitress	Oct. 28, 1922		8		5	62.5		3		60.0	60.0		2		40.0	40.0
210.	Kitchen help	July 15, 1922	4		3		75.0	2		66.7		66.7	1		33.3		33.3
211.	Kitchen help	May 5, 1923	3		3		100.0	3		100.0		100.0					
212.	Labor Commissioner, deputy	Sept. 2, 1922	21	6	18	5	85.2	3	1	16.7	20.0	17.4	15	4	83.3	80.0	82.6
213.	Laborer	Nov. 24, 1922	47		44		93.6	34		77.3		77.3	10		22.7		22.7
214.	Laboratory assistant, junior (chemistry) Grade 1	Dec. 2, 1922	10	1	8		72.7	5		62.5		62.5	3		37.5		37.5
215.	Laboratory assistant in entomology, Grade 2	Dec. 2, 1922	4		2		50.0	2		100.0		100.0					
216.	Laundress	July 15, 1922		5		3	60.0		2		66.7	66.7		1	33.3		33.3
217.	Laundress	May 5, 1923		9		9	100.0		8		88.9	88.9		1	11.1		11.1
218.	Laundryman	July 15, 1922	8		5		62.5	3		60.0		60.0	2		40.0		40.0
219.	Laundryman	May 5, 1923	5		4		80.0	3		75.0		75.0	1		25.0		25.0
220.	Leverman	Oct. 28, 1922	2		1		50.0						1		100.0		100.0
221.	Leverman	June 9, 1923	1		1		100.0						1		100.0		100.0
222.	Linotype operator	Oct. 28, 1922	20		17		85.0	12		71.0		71.0	5		29.0		29.0
223.	Linotype operator	June 9, 1923	1														
224.	Machinist, auto	Oct. 28, 1922	2														
225.	Machinist, general	Oct. 28, 1922	26		17		65.4	7		41.0		41.0	10		59.0		59.0
226.	Machinist, general, foreman	Oct. 28, 1922	3		3		100.0						3		100.0		100.0
227.	Machinist, locomotive	Oct. 28, 1922	7		6		85.8	3		50.0		50.0	3		50.0		50.0
228.	Machinist helper	Oct. 28, 1922	5		5		100.0	5		100.0		100.0					
229.	Manager, farm, Correctional School for Boys	Aug. 5, 1922	19		14		73.7	2		14.0		14.0	12		86.0		86.0
230.	Matron	July 15, 1922		9		7	77.8		5		70.8	70.8		2		29.2	29.2
231.	Matron	May 5, 1923		4		4	100.0		4		100.0	100.0					
232.	Matron, assistant	July 15, 1922		3		3	100.0		2		66.7	66.7		1		33.3	33.3
233.	Matron, assistant	May 5, 1923		2		2	100.0		2		100.0	100.0					
234.	Matron, California School for Girls	Aug. 25, 1922		10		8	80.0		7		87.5	87.5		1		12.5	12.5
235.	Matron, ladies' rest room	Sept. 16, 1922		9		9	100.0		5		55.6	55.6		4		44.4	44.4
236.	Mattress maker	July 15, 1922	1		1		100.0						1		100.0		100.0
237.	Mattress maker	May 5, 1923	1		1		100.0						1		100.0		100.0
238.	Mechanic, automobile, foreman	Oct. 28, 1922	6		6		100.0	3		50.0		50.0	3		50.0		50.0
239.	Mechanic, automobile, journeyman	Oct. 28, 1922	18		8		44.0	4		50.0		50.0	4		50.0		50.0
240.	Mechanic helper, automobile	Oct. 28, 1922	5		4		80.0	4		100.0		100.0					
241.	Mechanic, general, foreman	Oct. 28, 1922	11		3		27.0	1		33.3		33.3	2		66.7		66.7
242.	Mechanic, general, journeyman	Oct. 28, 1922	3		3		100.0	3		100.0		100.0					
243.	Mechanic helper	Oct. 28, 1922	15		11		73.3	9		81.8		81.8	2		18.2		18.2
244.	Messenger	Aug. 5, 1922	2	3	1	2	60.0		2		100.0	66.7	1		100.0		33.3
245.	Messenger	Sept. 2, 1922	2	6	2	6	100.0	2	6	100.0	100.0	100.0					
246.	Messenger	Oct. 7, 1922	1	2	1	2	100.0	1	2	100.0	100.0	100.0					

APPENDIX II—Continued.

Tabular Statement of Examinations Held and Results Obtained During Period From July 1, 1922, to July 1, 1923.

	Kind of examination	Date	Number of applicants		Number examined		Per cent examined, men and women	Number passed		Per cent passed		Total per cent passed, men and women	Number failed		Per cent failed		Total per cent failed, men and women
			Men	Women	Men	Women		Men	Women	Men	Women		Men	Women	Men	Women	
247.	Messenger	Nov. 4, 1922	2	4	2	4	100 0	2	4	100 0	100 0	100 0					
248.	Messenger	Dec. 2, 1922	2	2		1	25 0		1		100 0	100 0					
249.	Messenger (boys)	Feb. 3, 1923	5		4		80 0	4		100 0		100 0					
250.	Messenger	Apr. 14, 1923	17	5	16	5	95 5	16	5	100 0	100 0	100 0					
251.	Messenger	May 5, 1923	1	6	1	6	100 0	1	5	100 0	83 3	85 6		1		16 7	14 4
252.	Messenger	May 15, 1923	3	1	3	1	100 0	3	1	100 0	100 0	100 0					
253.	Messenger	June 2, 1923	2	4	1	4	83 3	1	4	100 0	100 0	100 0					
254.	Milker	July 15, 1922	4		2		50 0	1		50 0		50 0	1		50 0		50 0
255.	Milker	May 5, 1923	1		1		100 0	1		100 0		100 0					
256.	Milker, California School for Girls	Aug. 25 1922	1		1		100 0	1		100 0		100 0					
257.	Mineralogist, deputy state (promotional)	Apr. 14, 1923	3		2		66 7	2		100 0		100 0					
258.	Monotype keyboard operator	Oct. 28, 1922	4	1	3	1	80 0	3	1	100 0	100 0	100 0					
259.	Nurse, general	May 5, 1923		5		2	40 0		2		100 0	100 0					
260.	Nurse, graduate	July 15, 1922		5		5	100 0		4		80 0	80 0		1		20 0	20 0
261.	Nurse helper	July 15, 1922		3		3	100 0		2		66 7	66 7		1		33 3	33 3
262.	Nurse, public health	Sept. 11, 1922		42		37	87 6		24		65 0	65 0		13		35 0	35 0
263.	Nurse, surgical	July 15, 1922		3		3	100 0		2		66 7	66 7		1		33 3	33 3
264.	Nurse, surgical	May 5, 1923	1		1		100 0	1		100 0		100 0					
265.	Nurseryman, Grades 2 and 3	June 9, 1923	4		4		100 0	1		25 0		25 0	3		75 0		75 0
266.	Painter, foreman	Oct. 28, 1922	4		4		100 0	1		25 0		25 0	3		75 0		75 0
267.	Painter, journeyman	Oct. 28, 1922	20		15		75 0	8		53 3		53 3	7		46 7		46 7
268.	Painter, helper	Oct. 28, 1922	1		1		100 0	1		100 0		100 0					
269.	Paver	Sept. 23, 1922	5		5		100 0	5		100 0		100 0					
270.	Pathologist, plant	Dec. 2, 1922	1		1		100 0	1		100 0		100 0					
271.	Pathologist, assistant plant	Dec. 2, 1922	1		1		100 0	1		100 0		100 0					
273.	Physician, assistant	Apr. 7, 1923	11		8		72 7	1		12 5		12 5	7		87 5		87 5
274.	Physician, first assistant	Apr. 7, 1923	4		4		100 0	3		75 0		75 0	1		25 0		25 0
275.	Pileman	Oct. 28, 1922	9		4		44 4	3		75 0		75 0	1		25 0		25 0
276.	Pileman	June 9, 1923	3		3		100 0						3		100 0		100 0
277.	Plumber, foreman	Oct. 28, 1922	3		1		33 3	1		100 0		100 0					
278.	Plumber, journeyman	Oct. 28, 1922	13		8		61 5	5		62 5		62 5	3		37 5		37 5
279.	Plumber, helper	Oct. 28, 1922	3		2		66 7	1		50 0		50 0	1		50 0		50 0
280.	Porter, State Printing Office	Oct. 28, 1922	5		5		100 0	4		80 0		80 0	1		20 0		20 0
281.	Porter, State Printing Office	June 9, 1923	1		1		100 0	1		100 0		100 0					
282.	Poultryman	July 15, 1922	2		2		100 0	1		50 0		50 0	1		50 0		50 0
283.	Poultryman	May 5, 1923	5		3		60 0	3		100 0		100 0					
284.	Pressman, cylinder	Oct. 28, 1922	13		13		100 0	7		53 8		53 8	6		46 2		46 2
285.	Pressman, general	June 9, 1923	1		1		100 0	1		100 0		100 0					

286. Pressman, job	June 9, 1923	1		1		100.0	1		100.0		100.0							
287. Pressman, job	Nov. 28, 1922	10		7		70.0	6		85.7		85.7	1		14.3			14.3
289. Pressman, job apprentice	Oct. 28, 1922	1		1		100.0	1		100.0		100.0							
290. Printer, apprentice	Oct. 28, 1922	3		2		66.7	2		100.0		100.0							
291. Printer, apprentice	June 9, 1923	2		2		100.0	2		100.0		100.0							
292. Proofreader	Oct. 28, 1922	6	1	6	1	100.0	4		66.7		57.1	2	1	33.3	100.0		42.9
293. Proofreader	June 9, 1923	2	1	2	1	100.0	2	1	100.0	100.0	100.0							
294. Quarantine officer, Grade 3	Dec. 2, 1922	7		7		100.0	7		100.0		100.0							
295. Quarantine officer, supervising, Grade 4	Dec. 2, 1922	5		5		100.0	5		100.0		100.0							
296. Rammer	Sept. 23, 1922	7		7		100.0	7		100.0		100.0							
297. Referee, Industrial Accident Commission	Oct. 28, 1922	44	1	39	1	88.6	28	1	72.0	100.0	72.5	11		28.0			27.5
298. Sampler, grain, Grade 2	Dec. 2, 1922	6		5		83.3	3		60.0		60.0	2		40.0			40.0
299. Seamstress	July 15, 1922		2		2	100.0		2		100.0	100.0							
300. Seamstress	May 5, 1923		2		2	100.0		2		100.0	100.0							
301. Section hand	Oct. 28, 1922	8		7		87.5	7		100.0		100.0							
302. Sheet metal worker	Oct. 28, 1922	2		2		100.0	2		100.0		100.0							
303. Sheet metal worker, helper	Oct. 2, 1922	2		2		100.0	2		100.0		100.0							
304. Shoemaker	July 15 1922	1		1		100.0	1		100.0		100.0							
305. Shoemaker	May 5, 1923	3		3		100.0	3		100.0		100.0							
306. Specialist, seed, Grade 4	Dec. 2, 1922	1		1		100.0	1		100.0		100.0							
307. Specialist, seed potato, Grade 4	Dec. 2, 1922	1		1		100.0	1		100.0		100.0							
308. Steamfitter	Oct. 28, 1922	4		4		100.0	1		25.0		25.0	3		75.0			75.0
309. Stenographer and typist	July 1, 1922	1	57	1	50	87.9	1	22	100.0	44.0	45.1		28	100.0	56.0		54.9
310. Stenographer and typist	Aug. 5, 1922	6	79	3	64	78.8	1	24	33.3	37.5	37.3	2	40	66.7	62.5		62.7
311. Stenographer and typist	Sept. 2, 1922	1	49	1	42	86.0	1	28	100.0	66.7	67.4		14		33.3		32.6
312. Stenographer and typist	Oct. 7, 1922	5	83	4	66	79.5		39		59.0	55.7	4	27	100.0	41.0		44.3
313. Stenographer and typist	Nov. 4, 1922	4	82	2	71	85.0	1	40	50.0	56.0	56.1	1	31	50.0	44.0		43.9
314. Stenographer and typist	Dec. 2, 1922	3	189	3	170	90.1	2	74	66.7	43.0	43.9	1	96	33.3	57.0		56.1
315. Stenographer and typist	Jan. 6, 1923	2	39	1	33	82.9		20		60.6	58.8	1	13	100.0	39.4		41.2
316. Stenographer and typist	Feb. 3, 1923	1	60		47	77.0		27		58.0	58.0		20		42.0		42.0
317. Stenographer and typist	Mar. 3, 1923	2	40	1	32	78.6	1	16	100.0	50.0	51.5		16		50.0		48.5
318. Stenographer and typist	Apr. 7, 1923		73		56	76.7		27		48.0	48.0		29		52.0		52.0
319. Stenographer and typist	May 5, 1923	1	62	1	52	84.0		28		54.0	52.8	1	24	100.0	46.0		47.2
320. Stenographer and typist	June 2, 1923		51		42	82.3		32		76.2	76.2		10		23.8		23.8
321. Stenographer, Grade 3 (promotional)	Sept. 22, 1922		1		1	100.0		1		100.0	100.0						
322. Stenographer, Grade 3	Nov. 18, 1922		11		10	91.0		3		30.0	30.0		7		70.0		70.0
323. Stenographer, Grade 3, State Controller (promotional)	Feb. 10, 1923		1		1	100.0		1		100.0	100.0						
324. Stenographer, Grade 2, Division of Motor Vehicles, (promotional)	June 16, 1923		2		2	100.0		2		100.0	100.0						
325. Stenographer-Clerk, Grade 3, Board of Control (promotional)	Nov. 11, 1922		1		1	100.0		1		100.0	100.0						
326. Stenographer, secretarial, Grade 3, Division of Markets, Department of Agriculture (promotional)	Sept. 30, 1922		1		1	100.0		1		100.0	100.0						
327. Superintendent of maintenance and repair, mechanical equipment, highways	Nov. 18, 1922	32		30		93.8	8		26.7		26.7	22		73.3			73.3
328. Superintendent of maintenance and repair, mechanical equipment, highways	June 30, 1923	6		6		100.0	1		16.7		16.7	5		83.3			83.3
329. Superintendent of maintenance and repair, general mechanical equipment, highways	Nov. 18, 1922	17		16		94.1	3		19.0		19.0	13		81.0			81.0
330. Superintendent of nursery service	Dec. 2, 1922	1		1		100.0	1		100.0		100.0						
331. Superintendent of standardization	Dec. 2, 1922	2		2		100.0	2		100.0		100.0						
332. Supervisor	July 15, 1922	3		3		100.0	2		66.7		66.7	1		33.3			33.3
333. Supervisor, assistant	July 15, 1922	2		2		100.0	2		100.0		100.0						

APPENDIX II—Continued.

Tabular Statement of Examinations Held and Results Obtained During Period From July 1, 1922, to July 1, 1923.

Kind of examination	Date	Number of applicants		Number examined		Per cent examined, men and women	Number passed		Per cent passed		Total per cent passed, men and women	Number failed		Per cent failed		Total per cent failed, men and women
		Men	Women	Men	Women		Men	Women	Men	Women		Men	Women	Men	Women	
334. Supervisor, assistant	May 5, 1923	4		3		75.0	3		100.0		100.0					
335. Supervisor, group (Preston)	Aug. 5, 1922	38		36		94.7	26		72.0		72.0	10		28.0		28.0
336. Supervisor, group (Whittier)	Aug. 5, 1922	29		26		89.7	20		76.9		76.9	6		23.1		23.1
337. Switchman	Oct. 28, 1922	28		19		68.0	13		68.0		68.0	6		32.0		32.0
338. Switchman	June 9, 1923	11		7		63.6	4		57.1		57.1	3		42.9		42.9
339. Teacher, grade, California School for Girls	Aug. 25, 1922		1		1	100.0		1		100.0	100.0					
340. Teacher of commercial subjects, California School for Girls	Aug. 25, 1922	1		1		100.0	1		100.0		100.0					
341. Teacher of domestic science, California School for Girls	Aug. 25, 1922		1		1	100.0		1		100.0	100.0					
342. Technical assistant, Grade 3	Dec. 9, 1922	1		1		100.0	1		100.0		100.0					
343. Tractor operator	July 15, 1922	2		2		100.0	2		100.0		100.0					
344. Tractor operator	May 5, 1923	7		5		71.4	4		80.0		80.0	1		20.0		20.0
345. Truckdriver	Oct. 28, 1922	96		63		63.6	21		33.3		33.3	42		66.7		66.7
346. Truckdriver	Nov. 1922	49		46		93.9	36		78.3		78.3	10		21.7		21.7
347. Truckdriver, foreman	Oct. 28, 1922	3		2		66.7						2		100.0		100.0
348. Typist-Clerk, Division of Weights and Measures, Department of Agriculture (promotional)	Nov. 11, 1922		1		1	100.0		1		100.0	100.0					
349. Typist-Clerk Motor Vehicle Department (promotional)	Nov. 28, 1922		1		1	100.0		1		100.0	100.0					
350. Upholsterer	July 15, 1922	1		1		100.0	1		100.0		100.0					
351. Veterinarian, assistant, Grade 2	Dec. 2, 1922	8		7		87.5	7		100.0		100.0					
352. Veterinarian, field, Grade 3	Dec. 2, 1922	25		24		95.9	15		62.5		62.5	9		37.5		37.5
353. Veterinarian, senior field, Grade 4	Dec. 2, 1922	10		7		70.0	5		71.4		71.4	2		28.6		28.6
354. Viticultural expert, Department of Agriculture	Dec. 2, 1922	1		1		100.0	1		100.0		100.0					
355. Viticultural expert, assistant to, Department of Agriculture, Grade 2	Dec. 2, 1922		1		1	100.0		1		100.0	100.0					
356. Waiter	July 15, 1922	1		1		100.0						1		100.0		100.0
357. Water	May 5, 1923	1		1		100.0	1		100.0		100.0					
358. Waitress	July 15, 1922		13		11	85.0		10		91.0	91.0		1		9.0	9.0
359. Waitress	May 5, 1923		7		5	71.4		5		100.0	100.0					
360. Watchman	Oct. 28, 1922	30		26		86.6	16		62.5		62.5	10		37.5		37.5
361. Wireman, inside, foreman	Oct. 28, 1922	2		1		50.0	1		100.0		100.0					
362. Wireman, inside, helper	Oct. 28, 1922	3		2		66.7	2		100.0		100.0					
363. Zoologist	Dec. 2, 1922	1		1		100.0	1		100.0		100.0					
364. Wireman, inside, journeyman	Oct. 28, 1922	10		7		70.0	1		14.2		14.2	6		85.8		85.8
Totals and average per cents		3563	2015	2900	1741	83.20	1708	1042	58.9	59.85	59.25	1192	699	41.10	40.15	40.75

APPENDIX II—Continued.

Tabular Statement of Examinations Held and Results Obtained During Period From July 1, 1923, to July 1, 1924.

Kind of examination	Date	Number of applicants		Number examined		Per cent examined, men and women	Number passed		Per cent passed		Total per cent passed, men and women	Number failed		Per cent failed		Total per cent failed, men and women
		Men	Women	Men	Women		Men	Women	Men	Women		Men	Women	Men	Women	
1. Accountant	Feb. 16, 1924	114	4	96	4	84.8	62	1	65.0	25.0	63.0	34	3	35.0	75.0	37.0
2. Agent, Board of Charities and Corrections	Apr. 19, 1924		30		25	83.3		10		40.0	40.0		15		60.0	60.0
3. Agent, Bureau of Labor Statistics	Sept. 22, 1923	12	10	10	9	86.4	5	4	50.0	44.4	47.4	5	5	50.0	55.6	52.6
4. Agent, chief assistant purchasing, Grade 5, Rank A (promotional)	Dec. 15, 1923	3		3		100.0	1		33.3		33.3	2		66.7		66.7
5. Agent, special, Industrial Welfare Commission	Feb. 23, 1924		18		13	72.2		4		30.8	30.8		9		69.2	69.2
6. Agent, special, Compensation Insurance Fund	July 31, 1923	11		10		90.9	8		80.0		80.0	2		20.0		20.0
7. Agent, special, Compensation Insurance Fund	Feb. 9, 1924	12		10		83.3	7		70.0		70.0	3		30.0		30.0
8. Agent, executive special, Compensation Insurance Fund	July 31, 1923	7		7		100.0	7		100.0		100.0					
9. Agent, executive special, Compensation Insurance Fund	Feb. 9, 1924	8		8		100.0	8		100.0		100.0					
10. Attendant	Sept. 1, 1923	135	92	125	84	92.1	111	79	88.8	94.0	90.9	14	5	11.2	6.0	9.1
11. Attendant	Apr. 1, 1924	153	109	141	98	89.4	134	95	95.0	96.9	95.8	7	3	5.0	3.1	4.2
12. Baker	Sept. 1, 1923	4		3		75.0	3		100.0		100.0					
13. Baker	Apr. 1, 1924	4		4		100.0	3		75.0		75.0	1		25.0		25.0
14. Bank examiner, Grade 5 (promotional)	Nov. 7, 1923	3		3		100.0	3		100.0		100.0					
15. Bank examiner	Feb. 16, 1924	96	3	83	1	84.9	41		49.0		48.6	42	1	51.0	100.0	51.4
16. Bookkeeper, junior and senior	Nov. 3, 1923	23	14	16	10	70.3	7	4	43.7	40.0	42.3	9	6	56.3	60.0	57.7
17. Bridgetender	Mar. 1, 1924	8		7		87.5	3		42.9		42.9	4		57.1		57.1
18. Butcher	Sept. 1, 1923	1		1		100.0	1		100.0		100.0					
19. Butcher	Apr. 1, 1924	2		2		100.0	1		50.0		50.0	1		50.0		50.0
20. Chauffeur and light truck driver	Apr. 1, 1924	7		6		85.7	3		50.0		50.0	3		50.0		50.0
21. Claim examiner, Compensation Insurance Fund	July 31, 1923	16	11	14	9	85.2	6	5	42.9	55.6	47.8	8	4	57.1	44.4	52.2
22. Claim examiner, Compensation Insurance Fund	Feb. 9, 1924	31	14	29	13	93.3	23	9	79.3	69.2	76.2	6	4	20.7	30.8	23.8
23. Claim Examiner, senior, Compensation Insurance Fund	July 31, 1923	10		9		90.0	2		22.3		22.3	7		77.7		77.7
24. Claim examiner, senior, Compensation Insurance Fund	Feb. 9, 1924	8	1	8		88.9	7		87.5		87.5	1		12.5		12.5
25. Claim investigator, Compensation Insurance Fund	July 31, 1923	10		10		100.0	6		60.0		60.0	4		40.0		40.0
26. Claims, superintendent of, Compensation Insurance Fund	Feb. 9, 1924	2		2		100.0	2		100.0		100.0					
27. Claims, assistant superintendent of, Compensation Insurance Fund	July 31, 1923	3		2		66.7	2		100.0		100.0					
28. Claims, assistant superintendent of, Compensation Insurance Fund	Feb. 9, 1924	9		8		88.9	6		75.0		75.0	2		25.0		25.0
29. Clerical aid	Oct. 20, 1923	11	116	8	107	90.6	7	76	87.5	71.0	72.2	1	31	12.5	29.0	27.8
30. Clerical aid	Dec. 22, 1923	2	62	2	59	95.3	1	47	50.0	79.7	78.7	1	12	50.0	20.3	21.3
31. Clerical aid	June 14, 1924	41	177	35	163	92.1	23	100	65.7	61.3	62.1	12	63	34.3	38.7	37.9
32. Clerk, deputy court	June 7, 1924	117		93		79.5	24		26.0		26.0	69		74.0		74.0
33. Clerk, chief deputy, of Supreme Court	Feb. 21, 1924	5		5		100.0	5		100.0		100.0					

APPENDIX II—Continued.

Tabular Statement of Examinations Held and Results Obtained During Period From July 1, 1923, to July 1, 1924.

	Kind of examination	Date	Number of applicants		Number examined		Per cent examined, men and women	Number passed		Per cent passed		Total per cent passed, men and women	Number failed		Per cent failed		Total per cent failed, men and women
			Men	Women	Men	Women		Men	Women	Men	Women		Men	Women	Men	Women	
34.	Clerk, junior	Feb. 16, 1924	80	355	66	318	88 3	11	83	16 7	26 0	24 5	55	235	83 3	74 0	75 5
35.	Clerk, placement	Jan. 26, 1924	29	20	26	20	94 0	3	5	11 5	25 0	17 4	23	15	88 5	75 0	82 6
36.	Clerk, senior	Feb. 16, 1924	199	28	178	26	89 9	71	18	39 0	69 0	43 6	107	8	61 0	31 0	56 4
37.	Clerk, senior (promotional)	May 10, 1924	1		1		100 0	1		100 0		100 0					
38.	Clerk, senior, Compensation Insurance Fund (promotional)	Aug. 25, 1923	4	6	4	6	100 0	2		50 0		20 0	2	6	50 0	100 0	80 0
39.	Clerk, stock	July 10, 1923	39		33		84 6	17		51 5		51 5	16		48 5		48 5
40.	Clerk, principal, stock	July 10, 1923	39		30		76 8	4		13 3		13 3	26		86 7		86 7
41.	Comptroller, assistant, Compensation Insurance Fund	July 31, 1923	2		1		50 0	1		100 0		100 0					
42.	Cook	Apr. 1, 1924	15	4	13	4	89 5	11	4	84 6	100 0	88 2	2		15 4		11 8
43.	Cook, Grade 1	Sept. 1, 1923	8	7	8	3	73 3	8	3	100 0	100 0	100 0					
44.	Cook, Grade 2	Sept. 1, 1923	3		3		100 0	3		100 0		100 0					
45.	Cook, cottage	Sept. 1, 1923		4		3	75 0		2		66 7	66 7		1		33 3	33 3
46.	Cook, cottage	Apr. 1, 1924		4		4	100 0		4		100 0	100 0					
47.	Dairyman	Sept. 1, 1923	5		3		60 0	2		66 7		66 7	1		33 3		33 3
48.	Deckhand	Mar. 1, 1924	5		2		40 0	2		100 0		100 0					
49.	Delineator, Grade 3	Aug. 18, 1923	4		3		75 0	1		33 3		33 3	2		66 7		66 7
50.	Deputy, State Corporation Department	Nov. 10, 1923	41		39		92 7	17		43 8		43 8	22		56 2		56 2
51.	Deputy, Real Estate Department	Mar. 15, 1924	44	2	37	2	84 8	10	1	27 0	50 0	28 2	27	1	73 0	50 0	71 8
52.	Draftsman, junior architectural, Grade 1	Oct. 13, 1923	1														
53.	Draftsman, assistant architectural, Grade 2	Oct. 13, 1923	2		2		100 0	2		100 0		100 0					
55.	Draftsman, architectural, Grade 3	Oct. 13, 1923	2		2		100 0	1		50 0		50 0	1		50 0		50 0
56.	Draftsman, senior architectural, Grade 4	Oct. 13, 1923	2		2		100 0	1		50 0		50 0	1		50 0		50 0
57.	Draftsman, junior, Grade 1	Aug. 18, 1923	10	3	6	1	53 8	5	1	83 3	100 0	85 8	1		16 7		14 2
58.	Draftsman, junior, Grade 1	Apr. 1, 1924	18		13		72 2	8		61 0		61 0	5		39 0		39 0
59.	Draftsman, assistant civil engineering, Grade 2	Aug. 18, 1923	10	1	6	1	63 6	4		66 7		57 1	2	1	33 3	100 0	42 9
60.	Draftsman, assistant civil engineering, Grade 2	Apr. 1, 1924	35		31		88 0	6		20 1		20 1	25		79 9		79 9
61.	Draftsman, civil engineering, Grade 3	Aug. 18, 1923	18		15		83 3	2		13 5		13 5	13		86 5		86 5
62.	Draftsman, civil engineering, Grade 3	Apr. 1, 1924	32		28		87 5	7		25 0		25 0	21		75 0		75 0
63.	Draftsman, civil engineering, Grade 3 (promotional)	Aug. 18, 1923	1		1		100 0						1		100 0		100 0
64.	Draftsman, civil engineering, Grade 3 (promotional)	Apr. 1, 1924	1		1		100 0	1		100 0		100 0					
65	Draftsman, senior civil engineering, Grade 4	Aug. 18, 1923	5		5		100 0						5		100 0		100 0
66.	Draftsman, senior civil engineering, Grade 4	Apr. 1, 1924	21		19		90 0	3		15 0		15 0	16		85 0		85 0
67.	Draftsman, senior civil engineering, Grade 4 (promotional)	Apr. 1, 1924	4		3		75 0						3		100 0		100 0
68.	Draftsman, assistant mechanical engineering, Grade 2	Oct. 13, 1923	4		3		75 0						3		100 0		100 0
69.	Draftsman, mechanical engineering, Grade 3	Oct. 13, 1923	3		3		100 0						3		100 0		100 0
70.	Electrician, institutional	Sept. 1, 1923	6		5		83 3	3		60 0		60 0	2		40 0		40 0

71.	Electrician, instituional	Apr. 1, 1924	5		3		60.0	1		33.3		33.3	2		66.7		66.7
72.	Elevator operator	Apr. 1, 1924	10		8		80.0	4		50.0		50.0	4		50.0		50.0
73.	Engineer, associate bridge, Grade 5 (promotional)	Sept. 29, 1923	5		5		100.0	2		40.0		40.0	3		60.0		60.0
74.	Engineer, associate bridge, Grade 5	Apr. 1, 1924	24		20		83.3	4		20.0		20.0	16		80.0		80.0
75.	Engineering aid, junior, Grade 1	Aug. 18, 1923	53		45		85.0	43		96.0		96.0	2		4.0		4.0
76.	Engineering aid, junior, grade 1	Apr. 1, 1924	90		72		75.0	71		97.8		97.8	1		2.2		2.2
77.	Engineering aid, civil, Grade 2	Aug. 18, 1923	53		41		77.4	35		85.0		85.0	6		15.0		15.0
78.	Engineering aid, civil, Grade 2 (promotional)	Aug. 18, 1923	1		1		100.0	1		100.0		100.0					
79.	Engineering aid, civil, Grade 2, (promotional)	Apr. 1, 1924	82		70		85.4	66		94.3		94.3	4		5.7		5.7
80.	Engineer, junior civil, Grade 3	Aug. 18, 1923	54		41		76.0	32		78.0		78.0	9		22.0		22.0
81.	Engineer, junior civil, Grade 3	Apr. 1, 1924	57		46		80.7	33		71.7		71.7	13		28.3		28.3
82.	Engineer, junior civil, Grade 3 (promotional)	Apr. 1, 1924	2		2		100.0						2		100.0		100.0
83.	Engineer, junior civil, Grade 3	Oct. 13, 1923	4		4		100.0	4		100.0		100.0					
84.	Engineer, assistant civil, Grade 4	Aug. 18, 1923	46		29		63.0	11		38.0		38.0	18		62.0		62.0
85.	Engineer, assistant civil, Grade 4	Apr. 1, 1924	50		40		80.0	7		17.5		17.5	33		82.5		82.5
86.	Engineer, assistant civil, Grade 4 (promotional)	Aug. 18, 1923	1		1		100.0						1		100.0		100.0
87.	Engineer, assistant civil, Grade 4 (promotional)	Apr. 1, 1924	3		3		100.0						3		100.0		100.0
88.	Engineer, assistant civil, Grade 4	Oct. 13, 1923	5		4		80.0	3		75.0		75.0	1		25.0		25.0
89.	Engineer, assistant civil, Grade 4	Oct. 13, 1923	1		1		100.0	1		100.0		100.0					
90.	Engineer, junior equipment, Grade 3	Oct. 13, 1923	9		7		77.8	4		57.1		57.1	3		42.9		42.9
91.	Engineer of estimates and costs (promotional)	Sept. 29, 1923	2		2		100.0	2		100.0		100.0					
92.	Engineer, associate highway, Grade 5	Jan. 12, 1924	4		4		100.0	4		100.0		100.0					
93.	Engineer, highway, Grade 6	Jan. 12, 1924	34		29		85.0	3		10.0		10.0	26		90.0		90.0
94.	Engineer, assistant mechanical, Grade 4	Oct. 13, 1923	2		2		100.0	2		100.0		100.0					
95.	Engineer and inspector, safety, Compensation Insurance Fund	July 31, 1923			4		80.0	2		50.0		50.0	2		50.0		50.0
96.	Engineering and inspection, superintendent of safety, Compensation Insurance Fund	July 31, 1923	3		2		66.7	2		100.0		100.0					
97.	Engineer, junior structural, Grade 3	Oct. 13, 1923	5		4		80.0	3		75.0		75.0	1		25.0		25.0
98.	Engineer, assistant structural, Grade 4	Oct. 13, 1923	5		4		80.0	1		25.0		25.0	3		75.0		75.0
99.	Engineer, junior testing, Grade 3	Oct. 13, 1923	6		6		100.0	6		100.0		100.0					
100.	Engineman, locomotive, Grade 2	Apr. 1, 1924	6		4		66.7	1		25.0		25.0	3		75.0		75.0
101.	Engineman, stationary	Sept. 1, 1923	2		1		50.0	1		100.0		100.0					
102.	Engineman, stationary	Apr. 1, 1924	7		5		71.4	2		40.0		40.0	3		60.0		60.0
103.	Epidemiologist	Sept. 6, 1923	1		1		100.0	1		100.0		100.0					
104.	Farmer	Sept. 1, 1923	5		4		80.0	2		50.0		50.0	2		50.0		50.0
105.	Farmer	Apr. 1, 1924	8		7		87.5	5		71.4		71.4	2		28.6		28.6
106.	Farmhand	Sept. 1, 1923	26		22		84.6	21		95.0		95.0	1		5.0		5.0
107.	Farmhand	Apr. 1, 1924	21		19		90.5	18		94.7		94.7	1		5.3		5.3
108.	Field worker, Bureau of Tuberculosis	May 31, 1924		7		5	71.4		3		60.0	60.0		2		40.0	40.0
109.	Fireman, locomotive, Grade 1	Apr. 1, 1924	15		10		66.7	5		50.0		50.0	5		50.0		50.0
110.	Fireman, stationary	Sept. 1, 1923	9		8		88.9	5		62.5		62.5	3		37.5		37.5
111.	Fireman, stationary	Apr. 1, 1924	10		6		60.0	4		66.7		66.7	2		33.3		33.3
112.	Fire ranger, district	Mar. 29, 1924	36		25		69.4	11		44.4		44.4	14		55.6		55.6
113.	Foreman, engine	Apr. 1, 1924	8		5		62.5	2		40.0		40.0	3		60.0		60.0
114.	Gardener, floral	Sept. 1, 1923	8		7		87.5	7		100.0		100.0					
115.	Gardener, floral	Apr. 1, 1924	10		8		80.0	5		62.5		62.5	3		37.5		37.5
116.	Gardener, vegetable	Sept. 1, 1923	1		1		100.0	1		100.0		100.0					
117.	Gardener, vegetable	Apr. 1, 1924	5		5		100.0	5		100.0		100.0					
118.	Handyman	Sept. 1, 1923	4		4		100.0	3		75.0		75.0	1		25.0		25.0
119.	Handyman	Apr. 1, 1924	7		6		85.7	6		100.0		100.0					
120.	Hollerith key punch operator	Aug. 25, 1923		1													
121.	Hollerith tabulating machine operator	Aug. 25, 1923		3		3	100.0							3		100.0	100.0

APPENDIX II—Continued.

Tabular Statement of Examinations Held and Results Obtained During Period from July 1, 1923, to July 1, 1924.

	Kind of examination	Date	Number of applicants		Number examined		Per cent examined, men and women	Number passed		Per cent passed		Total per cent passed, men and women	Number failed		Per cent failed		Total per cent failed, men and women
			Men	Women	Men	Women		Men	Women	Men	Women		Men	Women	Men	Women	
122.	Housekeeper	Sept. 1, 1923		6		6	100.0		4		66.7	66.7		2		33.3	33.3
123.	Housekeeper	Apr. 1, 1924		3		3	100.0		2		66.7	66.7		1		33.3	33.3
124.	Hydrotherapist and masseur	Sept. 1, 1923	2														
125.	Hydrotherapist and masseur	Apr. 1, 1924		1		1	100.0		1		100.0	100.0					
126.	Janitor	Apr. 1, 1924	51		38		74.5	23		60.5		60.5	15		39.5		39.5
127.	Kitchen help	Sept. 1, 1923	4		3		75.0	3		100.0		100.0					
128.	Kitchen help	Apr. 1, 1924	4		4		100.0	4		100.0		100.0					
129.	Laundress	Sept. 1, 1923		1		1	100.0		1		100.0	100.0					
130.	Laundress	Apr. 1, 1924		3		2	66.7		2		100.0	100.0					
131.	Laundry help	Sept. 1, 1923		1		1	100.0		1		100.0	100.0					
132.	Laundry help	Apr. 1, 1924	1		1		100.0	1		100.0		100.0					
133.	Laundryman	Sept. 1, 1923	2		2		100.0	2		100.0		100.0					
134.	Laundryman	Apr. 1, 1924	3		2		66.7	2		100.0		100.0					
135.	Machinist	Mar. 1, 1924	33		27		81.8	8		30.8		30.5	19		69.5		69.5
136.	Manager, business, state hospitals	Aug. 1, 1923	42		40		95.2	13		32.5		32.5	27		67.5		67.5
137.	Manager, employment, Bureau of Labor Statistics	Jan. 19, 1924	11	5	10	5	94.4	10	5	100.0	100.0	100.0					
138.	Matron	Sept. 1, 1923		1													
139.	Matron	Apr. 1, 1924		3		2	66.7		1		50.0	50.0		1		50.0	50.0
140.	Matron, assistant	Sept. 1, 1923	1		1		100.0	1		100.0		100.0					
141.	Matron, assistant	Apr. 1, 1924		1		1	100.0		1		100.0	100.0					
142.	Mattress maker	Sept. 1, 1923	2		2		100.0	1		50.0		50.0	1		50.0		50.0
143.	Mechanic, automobile	Mar. 1, 1924	79		60		75.9	31		52.0		52.0	29		48.0		48.0
144.	Mechanic, general	Mar. 1, 1924	71		64		90.1	46		72.0		72.0	18		28.0		28.0
145.	Medical director, Compensation Insurance Fund	July 31, 1923	1		1		100.0	1		100.0		100.0					
146.	Medical director, assistant, Compensation Insurance Fund	July 31, 1923	3		3		100.0	3		100.0		100.0					
147.	Medical director, district, Compensation Insurance Fund	July 31, 1923	3		2		66.7	2		100.0		100.0					
148.	Messenger	July 7, 1923	2	3	1	2	60.0	1	2	100.0	100.0	100.0					
149.	Messenger	Sept. 22, 1923	16	14	13	13	89.7	9	11	69.2	84.6	76.9	4	2	30.8	15.4	23.1
150.	Messenger	Oct. 6, 1923	10	16	10	16	100.0	6	10	60.0	62.5	61.5	4	6	40.0	37.5	38.5
151.	Messenger	Jan. 5, 1924	5	5	5	4	90.0	3	4	60.0	100.0	77.8	2		40.0		22.2
152.	Messenger	Feb. 2, 1924	3	8	2	7	81.0	1	6	50.0	85.7	77.8	1	1	50.0	14.3	22.2
153.	Messenger	Mar. 1, 1924		2		2	100.0							2		100.0	100.0
154.	Messenger	May 3, 1924	17	9	15	7	84.6	9	6	60.0	85.7	68.2	6	1	40.0	14.3	31.8
155.	Messenger	June 14, 1924	46	7	36	7	76.8	29	7	80.0	100.0	83.7	7		20.0		16.3
156.	Milker	Sept. 1, 1923	1		1		100.0	1		100.0		100.0					
157.	Milker	Apr. 1, 1924	7		7		100.0	6		85.7		85.7	1		14.3		14.3
158.	Nurse, graduate	Sept. 1, 1923	2		2		100.0	2		100.0		100.0					
159.	Nurse, graduate, general	Apr. 1, 1924		8		8	100.0		7		87.5	87.5		1		12.5	12.5

160.	Nurse, graduate, surgical	Apr. 1, 1924		2		1	50.0		1		100.0	100.0					
161.	Nurse and medical secretary, Compensation Insurance Fund	July 31, 1923		1		1	100.0		1		100.0	100.0					
162.	Pay roll auditor, junior, Compensation Insurance Fund	July 31, 1923	10	1	10	1	100.0	5	1	50.0	100.0	54.5	5		50.0		45.5
163.	Pay roll auditor, junior, Compensation Insurance Fund	Feb. 9, 1924	20	5	15	4	76.0	10		66.7		52.6	5	4	33.3	100.0	47.4
164.	Pay roll auditor, Compensation Insurance Fund	July 31, 1923	16		14		87.5	13		92.9		92.9	1		7.1		7.1
165.	Pay roll auditor, Compensation Insurance Fund	Feb. 9, 1924	21	1	17	1	81.9	12		70.6		66.7	5	1	29.4	100.0	33.3
166.	Pay roll auditor, senior, Compensation Insurance Fund	July 31, 1923	3		3		100.0	3		100.0		100.0					
167.	Poultryman	Sept. 1, 1923	2		2		100.0	1		50.0		50.0	1		50.0		50.0
168.	Poultryman	Apr. 1, 1924	2		1		50.0	1		100.0		100.0					
169.	Public Instruction, Assistant Superintendent of, Division of Statistics and Accounts	Dec. 26, 1923	2		2		100.0	1		50.0		50.0	1		50.0		50.0
170.	Rehabilitation agent, Compensation Insurance Fund	July 31, 1923	1	2		2	66.7		2		100.0	100.0					
171.	Seamstress	Sept. 1, 1923		1													
172.	Seamstress	Apr. 1, 1924		2		1	50.0		1		100.0	100.0					
173.	Secretary, Compensation Insurance Fund	July 31, 1923	1		1		100.0	1		100.0		100.0					
174.	Secretary, assistant, Compensation Insurance Fund	July 31, 1923	2		2		100.0	2		100.0		100.0					
175.	Shoemaker	Sept. 1, 1923	1		1		100.0	1		100.0		100.0					
176.	Shoemaker	Apr. 1, 1924	1		1		100.0						1		100.0		100.0
177.	Statistician, Compensation Insurance Fund	July 31, 1923	1	1	1	1	100.0	1	1	100.0	100.0	100.0					
178.	Stenographer and typist	July 7, 1923		23		18	78.3		12		66.7	66.7		6		33.3	33.3
179.	Stenographer and typist	Sept. 8, 1923	3	37	1	18	47.5	1	11	100.0	61.1	63.2		7		38.9	36.8
180.	Stenographer and typist	Oct. 6, 1923	1	45	1	36	80.4		11		30.6	29.7	1	25	100.0	69.4	70.3
181.	Stenographer and typist	Nov. 3, 1923		49		36	73.5		27		75.0	75.0		9		25.0	25.0
182.	Stenographer and typist	Dec. 1, 1923		41		31	75.6		22		71.0	71.0		9		29.0	29.0
183.	Stenographer and typist	Jan. 5, 1924	2	32	2	26	82.4	2	12	100.0	46.1	50.0		14		53.9	50.0
184.	Stenographer and typist	Mar. 1, 1924	6	181	4	129	71.2	2	75	50.0	58.0	57.9	2	54	50.0	42.0	42.1
185.	Stenographer and typist	May 3, 1924	2	172	1	150	86.2	1	62	100.0	41.0	41.7		88		59.0	58.3
186.	Stenographer-Secretary, Fish and Game Commission (promotional)	Aug. 25, 1923		2		2	100.0		2		100.0	100.0					
187.	Storekeeper, institutional	Sept. 17, 1923	12		10		83.3	8		80.0		80.0	2		20.0		20.0
188.	Superintendent of Claims, Compensation Insurance Fund	July 31, 1923	2		1		50.0	1		100.0		100.0					
189.	Superintendent of underwriting, Compensation Insurance Fund	July 31, 1923	4		4		100.0	4		100.0		100.0					
190.	Supervisor (men)	Apr. 1, 1924	2		2		100.0	2		100.0		100.0					
191.	Supervisor, assistant	Sept. 9, 1923	4		44		100.0	4		100.0		100.0					
192.	Switchman, Grade 2	Apr. 1, 1924	27		15		55.6	7		47.0		47.0	8		53.0		53.0
193.	Tailor	Apr. 1, 1924	1		1		100.0						1		100.0		100.0
194.	Telephone operator	Sept. 15, 1923		52		39	75.0		24		61.5	61.5		15		38.5	38.5
195.	Tractor operator	Sept. 1, 1923	8		7		87.5	4		57.1		57.1	3		42.9		42.9
196.	Tractor operator	Apr. 1, 1924	5		4		80.0	4		100.0		100.0					
197.	Truckdriver	Mar. 1, 1924	181		133		73.5	74		56.0		56.0	59		44.0		44.0
198.	Typist, Division of Motor Vehicles	Dec. 22, 1923	1	14	1	13	93.3		9		69.2	64.3	1	4	100.0	30.8	35.7
199.	Typist-Clerk, California Highway Commission (promotional)	Dec. 15, 1923		9		9	100.0		1		11.1	11.1		8		88.9	88.9
200.	Upholsterer	Sept. 1, 1923	3		2		66.7						2		100.0		100.0
201.	Waiter	Sept. 1, 1923	2		2		100.0	2		100.0		100.0					
202.	Waitress	Sept. 1, 1923		17		15	88.2		14		93.3	93.3		1		6.7	6.7
203.	Waitress	Apr. 1, 1924		28		24	85.7		24		100.0	100.0					
	Totals and average per cents		3145	1921	2617	1637	83.97	1566	942	59.84	57.54	58.96	1051	695	40.16	42.46	41.04

APPENDIX III.

FINANCIAL STATEMENT.

Seventy-fourth and Seventy-fifth Fiscal Years.

	Seventy-fourth fiscal year, 1922-1923	Seventy-fifth fiscal year, 1923-1924
Appropriation	$43,590 00	$35,000 00
Balance forward from seventy-third fiscal year	654 06	
Totals	$44,244 06	$35,000 00
Expenditures	41,643 37	32,516 41
Balances	$2,600 69	$2,483 59

DISTRIBUTION OF EXPENDITURES.

	Seventy-fourth fiscal year, 1922-1923	Seventy-fifth fiscal year, 1923-1924
Office salaries	$26,811 42	$20,653 48
Commissioners' salaries	4,220 00	4,400 00
Sacramento office, incidental expenses	229 72	242 66
Los Angeles office and rental	600 00	600 00
Traveling (administrative and examination)	3,206 84	3,186 24
Materials and supplies	674 43	421 23
Printing	2,205 15	1,165 80
Postage	1,959 27	1,082 16
Telephone and telegraph	738 24	448 64
Examination and classification expense	514 90	237 91
Property and equipment	483 40	78 29
Totals	$41,643 37	$32,516 41

Distribution of Expenditures, Showing the Relative Amount Spent for Salaries and Other Expenses.

	Seventy-fourth fiscal year, 1922-1923			Seventy-fifth fiscal year, 1923-1924		
	Employees	Annual salary	Other expenses	Employees	Annual salary	Other expenses
Administration division	10	$14,713 31	$8,890 96	9	$13,577 92	$5,741 33
Examination division	8	16,318 11	1,720 99	5	11,475 56	1,721 60
Totals	18	$31,031 42	$10,611 95	14	$25,053 48	$7,462 93

APPENDIX IV.

LIST OF PERSONS WHO ASSISTED IN CONDUCTING EXAMINATIONS DURING THE BIENNIAL PERIOD 1922–1924.

In the fourteen services or main classes of work into which the civil service classification is divided, there are between six and seven hundred subclasses or positions. This means that in order to recruit employees for the varied governmental activities of the State of California the Civil Service Commission must, as the needs of the service require, hold examinations for more than six hundred different kinds of positions, each of which is distinct from the others and requires the preparation of special questions and the assistance of special examiners. Many of the professions and trades for which examinations are given are so highly specialized and diversified in character that obviously the Commission could not, in justice to itself or to the service, attempt to conduct so many examinations unaided. Therefore, in order to meet the situation adequately, the Commission has followed the policy of appointing as special examiners experts in the various fields of activity for which examinations have been given. The cordiality and generosity with which these busy men and women from the technical, professional and business world have given their time to this important public service have been a source of gratification to the Commission. We, therefore, take this opportunity to make public acknowledgment of this service, and to express our gratitude to those who have so generously contributed gratuitously of their time and abilities.

For convenience of reference, the names of these examiners have been arranged by groups in accordance with the fields of work for which they rendered service.

ACCOUNTANT.

C. L. Avery, accountant, Los Angeles; John Cummings, accountant, San Francisco; C. DeSaules, city comptroller, Sacramento; J. F. Forbes, resident manager, Haskins & Sells, San Francisco; S. Gundelfinger, actuary, State Department of Insurance, San Francisco; F. F. Hahn, accountant, Haskins & Sells, San Francisco; S. G. Miles, Western Auto Supply Company, Los Angeles; W. K. Mitchell, accountant, Los Angeles; H. E. Nowell, accountant, Robinson, Bours & Nowell, San Francisco; Wm. Schleip, superintendent of accounts, State Board of Control, Sacramento; C. C. Staehling, accountant, Haskins & Sells, San Francisco.

AGENT, BOARD OF CHARITIES AND CORRECTIONS.

Kate Gordon, psychologist, Los Angeles; Margaret Lothrop, associate professor of Social Economics, Stanford University; F. C. Nelles, superintendent of Whittier State School, Whittier; Eugenia Schenk, Widows' Pension Bureau, San Francisco; Elizabeth Skeele, instructor in Sociology, University of Southern California.

AGENT, SPECIAL, INDUSTRIAL WELFARE COMMISSION.

Elizabeth Owen, Mills College, Oakland; John Steven, secretary and chief examiner, Los Angeles County Civil Service Commission, Los Angeles; Paul S. Taylor, assistant in Economics, University of California, Berkeley.

AGRICULTURE, POSITIONS IN STATE DEPARTMENT OF. (Positions dealing with Chemistry, Cattle Brand Inspection, Dairy Inspection, Entomology, Fruit and Vegetable Standardization, Grain and Warehouse Inspection, Plant Pathology, Quarantine Inspection, Seed Inspection, Veterinary Science, Viticulture, Weights and Measures, Zoology.)

G. L. Baxter, chief testing engineer, Southern Pacific Railroad Company, Sacramento; T. D. Beckwith, assistant professor of Pathology, University of California, Berkeley; W. L. Beedy, Sperry Flour Company, San Francisco; Dr. H. C. Bryant, in charge of Education, Publicity and Research, Fish and Game Commission, Berkeley; H. E. Burke, Forest Insect Laboratory, Stanford University; Dr. J. P. Bushong, veterinarian, Los Angeles; George E. Colby, assistant chemist, Department of Agriculture, Sacramento; G. A. Clough, attorney, San Francisco; Professor J. F. Duggar, University Farm, Davis; E. O. Essig, assistant professor of Entomology, University

of California, Berkeley; J. D. Fisher, Los Angeles; C. M. Fuller, Los Angeles; J. W. Filmore, professor of Agronomy, University of California, Berkeley; S. H. Green, secretary and manager, California Dairy Council, San Francisco; Dr. Joseph Grinnell, professor of Zoology and director of Museum of Vertebrate Zoology, University of California, Berkeley; E. H. Haack, manager, Central California Berry Growers' Association, San Francisco; R. M. Hagen, secretary, California Cattlemen's Association, San Francisco; C. M. Haring, professor of Veterinary Science and director of Agricultural Experiment Station, University of California, Berkeley; G. H. Hart, associate professor of Veterinary Science, University of California, Berkeley; H. H. Hicks, inspector in charge of United States Bureau of Animal Industry, San Francisco; W. T. Horne, associate professor of Plant Pathology, University of California, Berkeley; R. E. James, Mebius & Drescher, Sacramento; S. F. Kennedy, Riverside Dairy Company, Riverside; C. H. McCharles, director, Food and Drug Laboratory, University of California, Berkeley; J. F. Mackenzie, San Francisco; E. D. McSweeney, president, California Certified Seed Potato Growers' Association, El Monte; W. H. Nixon, C. C. Morse Seed Company, San Carlos; Dr. M. J. O'Rourke, veterinarian, San Francisco; T. M. Pierce, inspector, Division of Chemistry, Department of Agriculture, Sacramento; H. J. Quayle, Citrus Experiment Station, Riverside; C. L. Roadhouse, professor of Dairy Industry, University Farm, Davis; Dr. M. Rosenberger, superintendent of Adohr Stock Farms, Van Nuys; Hubbard Russell, cattleman, Los Angeles; H. J. Ryan, horticultural commissioner, Los Angeles County; E. M. Sheehan, president of Grape Growers' Exchange, San Francisco; E. K. Strobridge, company sealer, Oakland; F. T. Swett, president of California Pear Growers' Association, San Francisco; R. H. Taylor, secretary of Agricultural Legislative Commission, Sacramento; P. W. Tompkins, Curtis & Tompkins, San Francisco; H. F. Truax, broker, Wholesale Terminal Building, Los Angeles; H. H. Warner, American Fruit Growers, Incorporated, Pasadena; G. P. Weldon, professor of Horticulture, Chaffey Junior College, Ontario; C. P. Wilson, California Fruit Growers' Exchange, San Dimas.

BANK EXAMINER.

V. M. Alvord, First National Bank, San Francisco; W. B. Bakewell, Mercantile Trust Company, San Francisco; G. A. Belcher, San Francisco Savings and Loan Society, San Francisco; M. C. Bolts, cashier, Sacramento branch, Bank of Italy; L. W. Craig, Security Trust and Savings Bank, Los Angeles; A. Denton, bank examiner, San Francisco; G. R. Kingdon, First National Bank, Los Angeles; H. B. Raney, Pacific-Southwest Trust and Savings Bank, Los Angeles; J. H. Stephens, president, Merchants National Bank, Sacramento; S. G. Sucher, Los Angeles Clearing House, Los Angeles; O. Thompson, Pacific-Southwest Trust and Savings Bank, Los Angeles; C. B. Wingate, chief examiner, State Banking Department, San Francisco.

COMPENSATION INSURANCE FUND, POSITIONS IN STATE. (Superintendent of Claims, Claim Investigator, Claim Examiner, Pay Roll Auditor, Special Agent, Safety Engineer, Medical Director, etc.)

S. H. Beckett, examiner, State Insurance Department, San Francisco; W. A. Chowen, manager, California Inspection Rating Bureau, San Francisco; John Cummings, accountant, San Francisco; J. M. Dodd, San Francisco; C. B. Ege, insurance broker, Los Angeles; F. W. Fellows, assistant secretary, Industrial Accident Commission, Los Angeles; A. B. Harris, referee, Industrial Accident Commission, Los Angeles; D. H. Hauschilt, Los Angeles; F. J. McGee, McCarthy & McGee, Sacramento; Victor Montgomery, insurance broker, Los Angeles; A. W. Mowbray, associate professor of Insurance, University of California, Berkeley; W. P. Ratliff, secretary and manager, Self Insurance Department, Industrial Accident Commission, San Francisco; H. F. Risbrough, assistant to Insurance Commissioner, Los Angeles.

CORPORATION DEPARTMENT, POSITIONS IN. (Examiner, Deputy, Auditor, Grade 4.)

W. D. Abel, assistant mining engineer, State Corporation Department, Los Angeles; F. F. Atkinson, attorney, Sacramento; C. L. Avery, accountant, Los Angeles; J. P. Beale, attorney, San Francisco; D. G. Bowker, attorney, Ventura; H. J. Brown, attorney, San Francisco; J. L. Davis, executive secretary, State Corporation Department, Sacramento; C. DeSaules, city comptroller, Sacramento; R. T. Devlin, attorney, Sacramento; C. J. Elkus, attorney, San Francisco; G. E. Farrand, attorney, Los Angeles; A. G. Fickeisen, attorney, Los Angeles; R. C. Foerster, attorney, San Francisco; D. P. Goodwin, attorney, Los Angeles; Charles A. Jones, Los Angeles; Harry W. Moore, certified public accountant, Los Angeles; Richard North, attorney, Los Angeles; Wm. Schleip, superintendent of accounts, State Board of Control, Sacramento; J. C. Stanton, Bradstreet Mercantile Agency, San Francisco.

DEPUTY, REAL ESTATE DEPARTMENT.

C. A. Adams, attorney, San Francisco; W. H. Akin, real estate, Los Angeles; G. C. Boardman, real estate, San Francisco; W. L. Brent, real estate, Los Angeles; E. J. Hughes, attorney, Sacramento; A. C. Hurt, attorney, Los Angeles; Emil Kahn, real estate, San Francisco; B. T. Keiser, commissioner, State Real Estate Department, Los Angeles; W. S. Kingsbury, surveyor-general of State of California, Sacramento; D. McGarry, real estate, Los Angeles; John McGaw, real estate, San Francisco; O. A. Vickrey, real estate, Los Angeles; H. S. Wanzer, Capitol Buliding and Loan Association, Sacramento.

EDITOR, TECHNICAL, HIGHWAY ENGINEERING.

N. A. Bowers, Pacific coast editor, McGraw-Hill Company, San Francisco; A. B. Fletcher, consulting highway engineer, Washington, D. C.; R. M. Morton, highway engineer, California Highway Commission, Sacramento; T. E. Stanton, assistant

highway engineer, California Highway Commission, Sacramento; C. B. Wing, professor of Civil Engineering, Stanford University.

ENGINEERING POSITIONS, ARCHITECTURAL.

M. M. Bruce, architect, San Francisco; J. S. Dean, architect, Sacramento; A. J. Wagner, city engineer, Sacramento; C. B. Wing, professor of Civil Engineering, Stanford University.

ENGINEERING POSITIONS, BRIDGE. (Associate Bridge Engineer, Grade 5; Associate Bridge Engineer, Grade 5, promotional.)

M. M. Bruce, architect, San Francisco; B. C. Gerwick, chief engineer, Healy-Tibbetts Construction Company, San Francisco; F. H. Joyner, consculting engineer, Los Angeles; E. J. Schneider, structural engineer, United States Steel Products, San Francisco; C. H. Schneider, Schneider, Chappell & Jones, Sacramento; J. H. Skeggs, division engineer, California Highway Commission, San Francisco; T. E. Stanton, assistant highway engineer, California Highway Commisson, Sacramento; A. J. Wagner, city engineer, Sacramento; H. E. Warrington, consulting bridge engineer, San Francisco; C. B. Wing, professor of Civil Engineering, Stanford University.

ENGINEERING POSITIONS, CIVIL. (Civil Engineer, Grades 1, 2, 3, 4; Civil Engineering Draftsman, Grades 1, 2, 3, 4; Delineator.)

T. A. Bedford, division engineer, California Highway Commission, Willits; J. S. Bright, United States Bureau of Public Roads, San Francisco; Perry Brown, city engineer, Fresno; E. Dagner, The White Company, San Francisco; B. A. Etcheverry, professor of Hydraulic Engineering, University of California, Berkeley; A. B. Fletcher, consulting highway engineer, Washington, D. C.; W. N. Frickstadt, United States Bureau of Public Roads, San Francisco; H. Hawgood, civil engineer, Los Angeles; F. C. Hermann, consulting engineer, San Francisco; L. I. Hewes, district engineer, United States Bureau of Public Roads, Los Angeles; F. H. Joyner, consulting engineer, Los Angeles; Mr. Morris, resident engineer, Mendocino Light and Power Company, Willits; R. M. Morton, highway engineer, California Highway Commission, Sacramento; Emery Oliver, general manager, Natomas Company, Sacramento; J. H. Skeggs, division engineer, California Highway Commission, San Francisco; E. Smith, deputy county engineer, Fresno; T. E. Stanton, assistant highway engineer, California Highway Commission, Sacramento; Mr. Taft, manager, Wagner Garage, Willits; A. J. Wagner, city engineer, Sacramento; C. B. Wing, professor of Civil Engineering, Stanford University; J. B. Woodson, division engineer, California Highway Commission, Fresno.

ENGINEERING POSITIONS, HIGHWAY. (Highway Engineer, Grade 6; Associate Highway Engineer, Grade 5; Associate Highway Engineer, Grade 5, promotional.)

J. S. Bright, United States Bureau of Public Roads, San Francisco; C. C. Cottrell, United States Bureau of Good Roads, San Francisco; E. Dagner, The White Company, San Francisco; A. B. Fletcher, consulting highway engineer, Washington, D. C.; L. I. Hewes, district engineer, United States Bureau of Public Roads, San Francisco; A. E. Loder, manager, Good Roads Bureau, California State Auto Association, San Francisco; R. M. Morton, highway engineer, California Highway Commission, Sacramento; Emery Oliver, general manager, Natomas Company, Sacramento; T. E. Stanton, assistant highway engineer, California Highway Commission, Sacramento; C. B. Wing, professor of Civil Engineering, Stanford University.

ENGINEERING POSITIONS, MECHANICAL. (Assistant Mechanical Engineer, Grade 4; Mechanical Engineering Draftsman, Grade 3; Assistant Mechanical Engineering Draftsman, Grade 2.)

L. D. Burlingame, district mechanical engineer, Pacific Gas and Electric Company, Sacramento; L. B. Luppen, consulting mechanical engineer and contractor, Sacramento; J. O. Tobey, district engineer, Pacific Gas and Electric Company, Sacramento.

ENGINEERING POSITIONS, SAFETY. (Associate Electrical Safety Engineer, Grade 5, Promotional; Assistant Structural Safety Engineer, Grade 4, Promotional; Mechanical Safety Engineer, Grades 3 and 4.)

W. A. Chowen, manager, California Inspection Rating Bureau, San Francisco; E. S. Cobb, consulting engineer, Los Angeles; E. B. Lefferts, manager, Public Safety Department, Automobile Club of Southern California, Los Angeles; A. H. Markwart, chief engineer, Pacific Gas and Electric Company, San Francsico; H. P. Phillips, secretary, San Francisco Chapter of American Society of Mechanical Engineers, San Francisco; C. H. Snyder, consulting engineer, San Francisco.

ENGINEERING POSITIONS, SANITARY. (Assistant Sanitary Engineer, Grade 4; Junior Sanitary Engineer, Grade 3; Sanitary Engineering Aid, Grade 2.)

A. L. Fales, district engineer, United States Public Health Service, Boston; C. G. Gillespie, director, Bureau of Sanitary Engineering, State Board of Health, Berkeley; W. S. Hommon, district engineer, United States Public Health Service, San Francisco; H. E. Tarbett, district engineer, United States Public Health Service, El Paso, Texas.

FORESTRY, STATE BOARD OF, POSITIONS IN. (Inspector, Promotional; District Fire Ranger; Nurseryman, Grades 2 and 3.)

R. L. P. Bigelow, United States Forest Service, Los Angeles; F. C. Brosius, supervising quarantine officer, State Department of Agriculture, Sacramento; R. H. Charlton, supervisor, Angeles National Forest, Los Angeles; S. J. Flintham, forester

of Los Angeles County, Los Angeles; J. R. Hall, forest supervisor, Sisson; C. E. Jordan, forest supervisor, Santa Barbara; M. B. Pratt, state forester, Sacramento; Wm. Vortriede, state landscape gardener, State Capitol, Sacramento.

HEALTH, STATE BOARD OF, POSITIONS IN. (Director, Bureau of Child Hygiene; Public Health Nurse; Epidemiologist; Field Worker, Bureau of Tuberculosis.)

Dr. Olga Bridgman, psychologist, San Francisco; Dr. C. C. Browning, physician, Los Angeles; Dr. G. J. Hall, city health officer, Sacramento; Anna Jamme, director, Bureau of Registration of Nurses, State Board of Health, San Francisco; Dr. F. L. Kelly, Health Department, Berkeley; Dr. W. P. Lucas, University of California Hospital, San Francisco; Anastasia Miller, nurse, Sacramento Red Cross; J. C. Perry, United States Public Health Service, San Francisco; Dr. Eva C. Reid, physician, University of California Hospital, San Francisco; Dr. J. W. Robinson, Los Angeles; Dr. Esther Rosencrantz, City and County Hospital, San Francisco; Dr. Gladys Shahovitch, deputy county health officer, Los Angeles; Lillian Simpson, supervisor nurse, Los Angeles County; Dr. H. R. Stolz, supervisor of Physical Education, State Board of Education, Sacramento; Dr. A. H. Sutherland, school psychologist, Los Angeles School Department; Agnes Talcott, nurse, Los Angeles Health Department; Mrs. E. Tate Thompson, director, Bureau of Tuberculosis, State Board of Health, Sacramento; Dr. N. E. Wayson, San Francisco.

IMMIGRATION AND HOUSING, POSITIONS IN COMMISSION OF. (Director of Housing; Housing Inspector, Grade 2; Complaint Officer, Grade 2; Complaint Officer, Grade 2, Promotional.)

Dr. W. M. Dickie, secretary, State Board of Health, Sacramento; A. E. Graupner, attorney, San Francisco; S. C. May, professor of Municipal Government, University of California, Berkeley; S. Schnaittacher, secretary, State Board of Architecture, San Francisco; W. C. Sharpsteen, attorney, San Francisco; T. C. West, attorney, San Francisco; C. Gordon Whitnall, City Planning Commission, Los Angeles.

INDUSTRIAL ACCIDENT COMMISSION, POSITIONS IN. (Referee; Decision Writer; Elevator Inspector.)

D. W. Burbank, attorney, San Francisco; L. J. Clarke, attorney, Los Angeles; H. W. Fessenden, Otis Elevator Company, San Francisco; W. J. French, executive secretary, California Society for the Blind, San Francisco; A. E. Graupner, attorney, San Francisco; Thomas Hamilton, Los Angeles; W. I. Morrison, attorney, Los Angeles; R. P. Wisecarver, attorney, San Francisco.

INSTITUTIONS, POSITIONS AT STATE. (Business Manager; Dietitian; Storekeeper; Supervisor; Matron; Surgical Nurse; Etc.)

W. J. Duddleson, head of Agriculture Department, California Polytechnic School, San Luis Obispo; E. C. Horst, E. C. Horst Company, West Sacramento; A. G. Geagle, business manager, Stockton State Hospital, Stockton; M. N. Kimball, Kimball-Upson Company, Sacramento; G. C. Kreutzer, United States Reclamation Service, Washington, D. C.; N. R. Martin, Southern California Loan Association, Los Angeles; F. E. Mason, business manager, Mendocino State Hospital, Talmage; F. C. Nelles, superintendent, Whittier State School, Whittier.

LABOR STATISTICS, POSITIONS IN BUREAU OF. (Agent; Deputy Labor Commissioner; Employment Manager; Placement Clerk.)

G. C. Bell, attorney, San Francisco; J. A. Burton, contractor, Los Angeles; W. G. Mathewson, commissioner, Bureau of Labor Statistics, San Francisco; Mrs. R. M. Moran, secretary, City Civil Service Commission, San Diego; Dr. P. S. Taylor, Department of Economics, University of California, Berkeley.

MINERALOGIST, DEPUTY STATE. (Promotional.)

B. O. Pickard, United States Bureau of Mines, Berkeley; R. E. Tremoureux, San Francisco.

OFFICE SERVICE POSITIONS. (Principal Stock Clerk; Stock Clerk; Principal Clerk, Promotional; Chief Clerk; Deputy Court Clerk; Cashier, Promotional; Senior Credential Clerk; Stenographer; Typist; Bookkeeper; Addressograph Operator; Hollerith Tabulating Machine Operator; Hollerith Key Punch Operator; Clerical Aid; Telephone Operator.)

C. K. Aldrich, Architectural Service Bureau, Los Angeles; J. F. Bowers, Fresno; P. W. Brown, assistant examiner, Los Angeles County Civil Service Commission, Los Angeles; V. C. Cole, H. S. Crocker Company, Fresno; E. V. Curley, principal accountant, State Board of Control, Sacramento; Alice Davies, school supervisor, Pacific Telephone and Telegraph Company, Sacramento; C. DeSaules, city comptroller, Sacramento; Annie Durkee, teacher, Fresno High School; G. F. Gairing, deputy superintendent of schools, Los Angeles; T. M. Gannon, legislative counsel, Sacramento; D. Greatrix, Los Angeles County; S. Gundelfinger, actuary, Department of Insurance, San Francisco; Miss H. B. Hart, supervisor, P. B. X. Service, Pacific Telephone and Telegraph Company, San Francisco; A. L. Johnson, attorney, Bureau of Labor Statistics, San Francisco; L. A. Lampton, county clerk and clerk of superior court, Los Angeles; W. G. McMillin, state purchasing agent, Sacramento; Mrs. R. M. Moran, secretary, City Civil Service Commission, San Diego; P. B. Potter, accountant, State Board of Control, Sacramento; C. F. Prentiss, manager, Thompson-Diggs Company, Sacramento; L. E. Ross, registrar, State Board of Health, San Francisco; R. H. Stalnaker, assistant highway engineer, California Highway Commission, Sacramento.

PHYSICIAN, FIRST ASSISTANT.

M. C. Barton, county superintendent of schools, Greenville, South Carolina; Dr. M. G. Carter, physician, Los Angeles; J. H. Donahue, assistant secretary, Cook County Civil Service Commission, Chicago, Illinois; F. J. Gertez, superintendent, Psychopathic Hospital, Chicago, Illinois; Clarence Neyman, assistant professor of Psychiatry, North Western Medical School, Chicago, Illinois; Dr. Nixon, physician, University of California Hospital, San Francisco; Dr. Eva C. Reid, physician, University of California Hospital, San Francisco.

PUBLIC INSTRUCTION, ASSISTANT SUPERINTENDENT OF.

C. A. Adams, attorney, San Francisco; E. M. Cox, assistant superintendent of schools, Oakland; J. M. Gwinn, superintendent of schools, San Francisco.

PURCHASING DEPARTMENT, POSITIONS IN. (Chief Assistant Purchasing Agent, Grade 5, Promotional; General Buyer, Grade 4, Promotional.)

H. B. Drescher, Mebius & Drescher Company, Sacramento; J. J. Haley, Jr., assistant to chief, Division of Engineering and Irrigation, State Department of Public Works, Sacramento; E. F. Holcomb, manager, H. S. Crocker Company, Sacramento; E. M. Krehbiel, Weinstock-Lubin Company, Sacramento.

SCHOOLS, POSITIONS AT CORRECTIONAL. (Group Supervisor; Farm Manager; Housefather; Housemother.)

O. H. Close, superintendent, Preston School of Industry, Waterman; D. T. Harriman, Los Angeles; L. S. Howard, Whittier; F. C. Nelles, superintendent, Whittier State School, Whittier; W. A. Smith, assistant superintendent and business manager, Whittier State School, Whittier.

TRADES, AUTOMOTIVE, BUILDING AND ALLIED. (Auto Mechanics; Truckdriver; General Mechanic; Machinist; Building Operation and Maintenance.)

E. S. Anderson, superintendent of equipment, California Highway Commission, Fresno; T. J. Bennett, McDonald & Kahn, San Francisco; C. A. Berry, Buick Auto Agency, Los Angeles; E. W. Book, contractor, Sacramento; C. E. Brown, California Highway Commission, Los Angeles; Emil Brown, plumbing contractor, Los Angeles; F. E. Burnside, general superintendent of maintenance and equipment, California Highway Commission Shops, Sacramento; W. B. Cannon, superintendent of equipment, California Highway Commission Shops, Lankershim; E. Dixon, Edmonds, Wiley & Dixon Company, Los Angeles; J. C. Duncan, contractor, Los Angeles; A. A. Ford, superintendent of equipment, California Highway Commission Shops, Redding; J. S. Gould, contractor, San Francisco; J. W. Grace, superintendent of equipment, California Highway Commission, Willits; E. M. Hart, Pacific Gas and Electric Company, Sacramento; H. H. Hilp, Barrett & Hilp, contractors, San Francisco; J. H. Hollister, assistant resident engineer, California Highway Commission, San Luis Obispo; R. E. Homans, construction engineer, Los Angeles; F. N. Killam, superintendent of Capitol Building and Grounds, Sacramento; M. F. McKenzie, contractor, Sacramento; M. Mealey, Mealey & Collins, contractors, San Francisco; James Patillo, plumbing contractor, Los Angeles; J. H. Pinkerton, plumbing contractor, San Francisco; W. K. Potts, associate mechanical engineer, Division of Architecture, State Department of Public Works, Sacramento; J. F. Provos, manager, Neal Company, San Francisco; J. C. Smith, automobile agent, San Bernardino; W. A. Smith, superintendent of equipment, California Highway Commission, San Francisco; H. C. Snead, Snead & Company, San Francisco; C. H. Schneider, Schneider, Chappell & Jones, Sacramento; R. C. Spilsbury, Newbury Electric Corporation, Los Angeles; T. E. Stanton, assistant state highway engineer, California Highway Commission, Sacramento.

TRADES, HIGHWAY CONSTRUCTION. (Maintenance and Repair; Mechanical Equipment.)

M. E. Beck, Fulton Iron Works, Los Angeles; J. C. Clark, assistant superintendent of auto equipment, Standard Oil Company, San Francisco; O. R. Cole, supervisor of auto equipment, Pacific Telephone and Telegraph Company, San Francisco; R. N. Corey, inspector, Ford Motor Company, Los Angeles; E. Essner, superintendent of yards and docks, Bethlehem Ship Building Corporation, San Francisco; W. R. Forker, general manager, Moreland Truck Company, Los Angeles; C. E. Kemper, Atterbury & Kemper, Los Angeles; S. H. Palmer, Palmer & McBryde, San Francisco; R. H. Stalnaker, assistant highway engineer, California Highway Commission, Sacramento; H. C. Venter, superintendent, Southern Pacific Shops, Sacramento.

TRADES, MARINE.

Captain F. M. Edwards, port superintendent, Matson Navigation Company, San Francisco; M. R. Hickman, port engineer, Matson Navigation Company, San Francisco; F. N. Killam, superintendent of Capitol Building and Grounds, Sacramento; P. N. Nelson, superintendent of Bridges and Buildings, Southern Pacific Company, San Francisco.

TRADES, PRINTING. (Job Pressman; Bookbinder; Bindery Worker; Assistant Foreman of Pressroom; General Foreman of Composing Room; Forelady of the Bindery.)

R. M. Bahls, Althof & Bahls, San Francisco; E. Barry, E. Barry Company, San Francisco; A. P. Bell, Mirror Printing and Publishing Company, Los Angeles; C. J. Branham, Anderson Printing Company, Sacramento; W. C. Coughlan, superintendent, Schwabacher-Frey Company, San Francisco; J. W. Gee, Hapeman-Gee

Printing Company, Sacramento; N. W. Kellaway, printer, Los Angeles; W. F. McKannay, Independent Press, San Francisco; M. Matuskiwiz, Sacramento Typothetae, Sacramento; T. J. O'Leary, Cordoza Company, San Francisco; J. M. Welch, foreman, State Printing Office, Sacramento.

TRADES, RAILROAD. (Engineman; Locomotive Hoist; Locomotive Fireman; Switchman.)

F. E. Burnside, superintendent, California Highway Commission Shops, Sacramento; C. M. Perkins, examiner, Western Division, Southern Pacific Company, Oakland; W. E. Shafer, master mechanic, Belt Line Railroad, Board of State Harbor Commissioners, San Francisco; F. E. Stewart, San Francisco.

APPENDIX V.

THE CIVIL SERVICE ACT.

CHAPTER 590.

An act to provide for a general system, based upon investigation as to merit, efficiency and fitness, for appointment to and holding during good behavior of office and employment under state authority and, in that behalf, to create a state civil service commission, to prescribe its powers and duties, to make the wilful violation of the provisions of this act a misdemeanor, to repeal all acts and parts of acts inconsistent herewith in so far as they may be inconsistent with the provisions of this act, and to make an appropriation therefor. (Approved June 16, 1913. Amended May 27, 1919; May 30, 1921; June 1, 1921; and June 7, 1923.)

The people of the State of California do enact as follows:

SECTION 1. *First*—The term "commission" as used in this act means the "state civil service commission" herein created, and the term "commissioner" as used in this act means one of the three members of that commission, all unless such terms are plainly used with some other meaning.

Second—The term "position" and "positions" as used in this act include all offices and employments under state authority, whether there be any salary or other compensation or emolument connected therewith, except offices held by elective officers as such and also except the militia and all offices and employments as now or hereafter provided by virtue of or under Article VIII of the constitution of the state, and except county and township offices and employments.

Third—The term "appointing power" as used in this act includes all persons whether acting singly or in conjunction with others in any way whatsoever, either by nomination or confirmation or as a board or commission or otherwise, in selecting any one to hold any position as that term is so used in this act.

Fourth—The term "appointment" as used in this act includes all means of selecting and employing any one to hold any position as that term is so used in this act.

SEC. 2. There is hereby created a commission known as the "state civil service commission" which shall consist of three commissioners one of whom shall be the executive member and the other two shall be associate members, each of which members shall be appointed by the governor for the term of four years from the expiration of the respective terms of the members in office at the time this amendatory act takes effect. Vacancies shall be filled by appointments by the governor for the unexpired terms. Any commissioner may be removed by concurrent resolution of both houses of the legislature adopted by a two-thirds vote of each house. The member appointed to the position of executive member of said commission shall be ex officio president of the commission. He shall receive as compensation for his service the sum of four thousand dollars per annum and devote all his time to the duties of his office, which shall be maintained at the city of Sacramento. Each of the associate members of said commission shall reecive as compensation for their services ten dollars per day while actually engaged in the duties of their office, not to exceed five hundred dollars each in any one year. All members of the commission shall receive their actual and necessary traveling expenses incurred in the performance of their duties. The total and items of all expenditures and obligations made, authorized and incurred by the commission shall not exceed the sums appropriated therefor by law. The names "commission" and "commissioners" as used in the act of which this is amendatory shall be construed to mean the executive head of the commission except that, in relation to the enactment of rules and regulations, the classifications and exemptions of places of employment and the dismissals from the public service, the votes of two members of the commission shall be necessary. In all other respects the duties, powers and functions now or hereafter conferred upon the civil service commission or commissioners are hereby vested in and conferred upon the executive member of said commission. (As amended statutes of 1921.)

SEC. 3. The commission shall employ a chief examiner and secretary, which offices may be combined, and such other employees as it may deem necessary or proper to carry out the purposes of this act. Their compensation shall be fixed by the commission, and they may be paid necessary traveling expenses incurred in the discharge of their duties. The duties of the chief examiner, secretary and other employees shall be prescribed by the commission, subject to the provisions of this act. It shall be the duty of the secretary to keep the minutes of the meetings of the commission and perform such other services as may be assigned him by the commission. The commission may select suitable persons to assist in examinations under its direction. The compensation of such assistants shall not exceed five dollars per day, except in the case of special and expert examiners employed in the preparation of questions and rating of candidates; and when the persons so selected are in the official service of the state it shall be deemed a part of their official duty to serve as such assistants without additional compensation.

SEC. 4. The commission is authorized to secure in the city of Sacramento suitable and convenient rooms and accommodations and cause the same to be furnished, heated and lighted, for carrying on the work of the commission and the commission may order the necessary stationery, postage stamps, and official seal and other articles to be supplied, and the necessary printing to be done for its official use.

SEC. 5. The commission shall:

First—Classify positions to be held under state authority in accordance with the provisions of this act and in accordance with the duties attached to such positions. The commission shall grade all positions within each class with respect to salaries, to the end that like salaries shall be paid for like duties, and shall establish minimum and maximum salary limits for each grade in its classification of positions, and shall provide by rule for advancement of salary within each grade on the basis of efficiency and length of service. Such classes and grades may from time to time be amended, added to, consolidated or abolished by the commission, but persons holding positions under the original classification or grade shall not be affected thereby. (As amended statutes of 1923.)

Second—Hold examinations to determine the merit, efficiency and fitness of applicants for positions, and prepare properly classified eligible lists from applicants so examined. All questions for examination shall be prepared under the supervision of the commission or chief examiner and delivered to the examining board or to the candidates by one of the commissioners or chief examiner or by an examiner specially designated to perform such service.

Third—Enforce the provisions of this act and prescribe, and enforce suitable rules and regulations for carrying the same into effect and from time to time amend and repeal the same.

Fourth—Keep minutes of its own proceedings and records of its examinations and other official actions.

Fifth—Records of individual efficiency of holders of positions in performing their duties shall be established in all offices and places of employment affected by this act. Such records shall be made by the appointing power, unless otherwise directed by the commission, and under and in accordance with such rules and regulations as the commission may prescribe, and a copy of such records shall be filed with the commission. The commission shall investigate all such efficiency records and may make its own records, and shall rate upon such records the item of "ascertained merit" in examinations for promotion. The commission shall establish and enforce rules and regulations under which records of unsatisfactory service may lead to reduction in grade and compensation of the person holding the position concerned, and shall further provide for the manner in which persons falling below the standards of efficiency fixed by its rules and regulations may be removed from their positions by the commission proceeding substantially as provided in this act and with the same effect as in case of removals by the appointing power.

Sixth—Make investigations concerning and report upon all matters touching the enforcement and effect of the provisions of this act and the rules and regulations prescribed thereunder; inspect all state institutions, offices, places of employment and services affected by this act, and ascertain whether this act and all such rules and regulations are obeyed. Such investigation may be made by any commissioner, or chief examiner, or by any other authorized agent of the commission. In the course of such investigation any commissioner, or chief examiner or such other authorized agent of the commission, or the secretary of the commission, shall have

power to administer oaths, subpœna and require the attendance in this state of witnesses and the production thereby of books, papers, documents and accounts appertaining to the investigation but not requiring the attendance of witnesses either with or without books, papers, documents or accounts unless residing within the same county or within thirty miles of the place of attendance.

Seventh—All hearings and investigations before the commission, or any commissioner, or the chief examiner or such other authorized agent of the commission shall be governed by this act and by rules of practice and procedure to be adopted by the commission, and in the conduct thereof neither the commission, nor any commissioner, nor the chief examiner nor such other authorized agent of the commission shall be bound by the technical rules of evidence. No informality in any proceeding or in the manner of taking testimony before the commission or any commissioner, or the chief examiner or such other authorized agent of the commission shall invalidate any order, decision, rule or regulation made, approved or confirmed by the commission. The superior court in and for the county, or city and county, in which any inquiry, investigation, hearing or proceeding may be held by the commission, or any commissioner, or the chief examiner or such other authorized agent of the commission shall have the power to compel the attendance of witnesses, the giving of testimony and the production of books, papers, documents and accounts, as required by any subpœna issued by the commission, or any commissioner, or such other authorized agent of the commission or the secretary. The commission, or the commissioner, or the chief examiner or such other authorized agent of the commission before whom the testimony is to be given or produced, in case of the refusal of any witness to attend or testify or produce any papers required by such subpœna, may report to the superior court in and for the county, or city and county, in which the proceeding is pending, by petition, setting forth that due notice has been given of the time and place of attendance of said witness, or the production of such books, papers, documents or accounts, and that the witness has been summoned in the manner prescribed in this act, and that the witness has failed and refused to attend or produce such books or papers or documents or accounts required by the subpœna, before the commission, or the commissioner, or the chief examiner or such other authorized agent of the commission, in the matter named in the notice and subpœna, or has refused to answer questions propounded to him in the course of such proceeding, and ask an order of said court, compelling the witness to attend and testify or produce such books or papers or documents or accounts before the commission, or any commissioner, or the chief examiner or such other authorized agent of the commission. The court, upon the petition of the commission, or any commissioner, or the chief examiner or such other authorized agent of the commission, shall enter an order directing the witness to appear before the court at a time and place to be fixed by the court in such order, the time to be not more than ten days from the date of the order, and then and there show cause why he has not attended and testified or produced said papers before the commission, or such commissioner, or the chief examiner or such other authorized agent of the commission. A copy of said order shall be served upon said witness. If it shall appear to the court that said subpœna was regularly issued by the commission, or any commissioner, or the chief examiner or other authorized agent of the commission or the secretary, the court shall thereupon enter an order that said witness appear before the commission, or such commissioner, or the chief examiner or any other authorized agent of the commission at the time and place fixed in said order, and testify or produce the required books, papers, documents and accounts, and upon failure to obey said order, said witness shall be dealt with as for contempt of court. The remedy provided in this section is cumulative, and shall not be construed to impair or interfere with the power of the commission, or a commissioner, or the chief examiner or any such other authorized agent of the commission to enforce the attendance of witnesses and the production of books, papers, documents and accounts.

The commission, or any commissioner, or the chief examiner or such other authorized agent of the commission may, in any investigation or hearing before the commission, or any commissioner, or the chief examiner or such other authorized agent of the commission, cause the deposition of witnesses residing within or without the state to be taken in the manner prescribed by law for like depositions in civil actions in the superior courts of this state and to that end may compel the attendance of witnesses and the production of books, papers, documents and accounts.

No person shall be excused from testifying or from producing any book, paper, document or account in any investigation or inquiry by or hearing before the com-

mission, or any commissioner, or the chief examiner or such other authorized agent of the commission, when ordered to do so, upon the ground that the testimony or evidence, book, paper, document or account required of him may tend to incriminate him or subject him to penalty or forfeiture, but no person shall be prosecuted, punished or subjected to any penalty or forfeiture for or on account of any act, transaction, matter or thing concerning which he shall, under oath, have testified or produced documentary evidence; *provided*, that no person so testifying shall be exempt from prosecution or punishment for any perjury committed by him in his testimony. Nothing herein contained shall be construed as in any manner giving to any person immunity of any kind otherwise than is herein expressly provided.

Eighth—Make a biennial report to the governor for transmission to the legislature, showing the action of the commission including all the rules and regulations adopted by it during such period and those that are in force at the time of making such report, information as to exempted positions as required by this act and the effects of this act and of all proceedings under it and any suggestions the commission or any commissioner may deem practical for the more effectual accomplishment of the purposes of this act.

Ninth—Meet at Sacramento as often as the needs of the public service may require, and at such other places as the commission may designate. A majority of the members of the commission shall constitute a quorum.

SEC. 6. It shall be the duty of all persons subject to the authority of the state in that behalf (including all state officers and employees and all state institutions of every kind and character) to aid in all proper ways in carrying into effect the provisions of this act and the rules and regulations prescribed from time to time thereunder and especially, at the request of the commission, to allow the commission the reasonable use of public buildings and to heat and light the same for the purposes of making examinations of applicants and investigations as provided by this act. Every one subject to the authority of the state in that behalf shall afford to the commission and its members and employees all reasonable facilities and give inspection of all books, papers, documents and accounts applying or in any way appertaining to any and all offices subject to the authority of the state in that behalf, and shall also produce said books, papers, documents and accounts, and shall attend and testify when required to do so by the commission, or any commissioner, or the chief examiner, or the secretary or any other authorized agent of the commission. The attorney general shall advise and assist the commission, and the district attorneys of the counties shall prosecute violations of this act. The commission may employ special counsel.

SEC. 7. The appointing power in all cases not excepted or exempted under the provisions of this act, or by virtue of the provisions of the constitution of the state, shall fill positions by appointment, including cases of transfers, reinstatements, promotions and reductions, in strict accordance with the provisions of this act and the rules and regulations prescribed from time to time hereunder, and not otherwise. Except only and to the extent that the appointing power otherwise requests as hereinafter provided, the positions held in the following specified classes are excepted from such method of appointment:

First—Appointees of the legislature and one person holding a position having a confidential relation whether as secretary or clerk or stenographer to each such appointee.

Second—Appointees of the governor and one person holding a position having a confidential relation whether as secretary or clerk or stenographer to each such appointee.

Third—The chief deputy of and also one person holding a position having a confidential relation whether as secretary or clerk or stenographer to an elective officer.

Fourth—The secretary or executive officer, or both, and also the attorney and one stenographer of any board or commission appointed by the legislature or governor or elected by the electors, and all stenographers in the superior and appellate courts.

Fifth—The assistant and deputies of the attorney general and all special attorneys for boards and officers.

Sixth—The members of the appointing board of and any chief in any legislative reference or counsel bureau and one person holding a confidential relation to each such chief.

Seventh—One warden for each of the state prisons.

Eighth—One superintendent for each of the state reformatories, state hospitals or other state charitable or correctional institutions; also the parole officers for the state prisons, Preston School of Industry and Whittier State School.

Ninth—Persons employed by the University of California and the state normal schools, and the teaching force of the elementary, secondary, trades and technical schools.

Tenth—Persons engaged in work done by co-operation between the state and federal governments.

Eleventh—The state librarian, the chief deputy or assistant state librarian and also one person holding a position having a confidential relation to the state librarian, and appointees under provisions for court, law, teachers, school and county libraries.

Twelfth—The secretary, chief accountant and children's agents of the state board of control.

Thirteenth—The employees of the state railroad commission.

Fourteenth—Superintendents, chiefs, and heads of departments.

All provided that at any time any vacancy in any position in any of the above specified fourteen excepted classes may be filled by the appointing power in the manner provided by this act, in which case the person appointed shall hold, during the tenure of office of said appointing power, such position under the tenure of good behavior and subject to the provisions of this act as if that position had not been so excepted but upon such appointee ceasing to hold such position that position shall be open as in such excepted class. Upon such appointee ceasing to hold such office by reason of the termination of the tenure of office of said appointing power, said appointee shall be restored to place upon the eligible lists in accordance with such rules and regulations as the commission may prescribe in that behalf. Any position subject to the provisions of this act may be declared exempted by resolution passed by concurrence of the three commissioners. Such resolution shall state separtely the reasons for each exemption. Not more than one appointment shall be made to or under any position covered by such resolution unless permission to appoint a different number is given therein. Any exception thus made may be terminated at any time by resolution of the commission. Appointments to exempted positions shall be reported immediately to the commission. The names of each exempted position and the names of the incumbent and the reason for each exemption shall be stated in the biennial reports of the commission.

SEC. 8. Within three months after the commission is constituted, it shall make rules for the classification of positions to be held under state authority to be provided by this act, and, subject to the provisions of this act, such rules shall govern appointments, transfers, reinstatements, promotions, reductions and removals, and examination of applicants, and the commission may amend such rules from time to time. Such rules shall be printed for public distribution.

SEC. 9. Subject to the special provisions in this act as to laborers, appointments shall be made to all positions that are not filled by promotion, reinstatement, transfer or reduction, under the provisions of this act and the rules in pursuance thereof, by the appointing power: Said appointing power shall notify the commission of any vacancy to be filled, stating the duties of the position. The commission shall then certify to the appointing power the names and addresses of the three persons standng highest on the eligible list for the class or grade to which the position belongs; but in case there be less than three on such eligible list, the commission shall certify the number thereon; and the appointing power shall fill the position by the appointment of one of the persons certified by the commission therefor. The term of eligibility shall be fixed for each eligible list at not less than one year. Appointments shall be made from the eligible list most nearly appropriate for the position to be filled, and a new list shall be created for a stated position or a group of positions only when there is no appropriate list existing from which appointment may be made. No person shall be appointed under any title not appropriate to the duties to be performed, and no person shall be assigned to perform the duties of any other position than that which he legally holds, except by consent of the commission. All appointments shall be for a probationary period to be fixed by the commission but not to exceed six months. Unless such appointee shall have been dismissed within such probationary period by the appointing power, for reasons stated in

writing and filed with the commission, his appointment shall become permanent subject to the provisions of this act as to removals, suspensions and changes. Discharged probationers may by unanimous vote of the commission be restored to the list of eligibles for certification to any position within their class other than the one from which they were rejected.

SEC. 10. The examinations shall be practical in their character, and shall relate to those matters which will fairly test the relative capacity and fitness of the persons examined to discharge the duties of the positions they seek. Applicants for positions in the mechanical trades and occupations may, in the discretion of the commission, be rated solely on experience and physical qualifications which may be determined by such evidence and in such manner as the commission may direct; and such applicants may be submitted to such further tests as the commission may require. The commission shall prepare lists of preliminary requirements and subjects of examinations for the several positions, and shall publish its rules and regulations and such information and advertise such examinations in such manner as the nature of the examinations may require. The commission, except as may be otherwise provided in the case of laborers, shall require an applicant to file in its office, in accordance with its rules and regulations, a reasonable length of time before the date of examination, a formal application filled out in his own handwriting. Blank forms of such applications shall be furnished by said commission without charge to all persons requesting the same. The commission may require in connection with applications, including laborers, such certificates of citizens, physicians, public officers or others having knowledge of the applicant, as the good of the service may require. The commission may refuse to examine, or after examination to certify as eligible, any one who is found to lack any of the established preliminary requirements for the examination or position for which he applies; or who is physically so disabled as to be rendered unfit to perform the duties of the position to which he seeks appointment, or who is addicted to the habitual use of intoxicating beverages to excess; or who has been guilty of a crime or of infamous or notoriously disgraceful conduct; or who has been dismissed from the public service for delinquency or misconduct; or who has intentionally made a false statement of any material facts, or practiced, or attempted to practice, any deception or fraud in his application, in his examination, or in securing his eligibilty. Any person appointed to a position under the provisions of this act who has secured his place on the eligible list through fraud shall be removed by the commission from his position and shall not thereafter be eligible for examination for any position under the provisions of this act except by unanamous permission of the commission. When the position to be filled involves fiduciary responsibility, the appointing power may require the appointee to furnish a reasonable bond or other security, and shall notify the commission of the amount and necessary details thereof.

SEC. 11. When there is no eligible list from which a position may be filled, the appointing power may, with the consent of the commission, fill such position by temporary appointment, and such temporary appointment shall not continue for a longer period than three months, nor shall successive temporary appointments be made to the same position under this section without the previous consent of the commission, and in no case shall any person hold a position under such successive temporary appointments for a longer period than six months without the unanimous consent of the commission.

SEC. 12. The commission shall establish rules and regulations under which emergency appointments may be made when those on the eligible lists are not immediately available, and for the time for which such emergency appointments shall be valid; and may fix a different time for different counties or cities and counties of the state.

SEC. 13. Vacancies in positions shall be filled, so far as practicable by promotion from among persons holding positions in a lower grade of the department, office or institution in which the vacancy exists. Promotions shall be based upon merit and competition and upon the superior qualifications of the person promoted as shown by his records of efficiency. For the purposes of this section an increase in the salary or other compensation of any person holding an office or position within the scope of the rules and regulations in force hereunder beyond the limit fixed for the grade in which such office and position is classified, shall be deemed a promotion. The commission may authorize the transfer of any person legally holding a position to a similar position in the same class or grade, and may provide for the reinstatement within one year of persons separated from positions without fault or delinquency

on their part, if within that time there is need for their services. No promotion, transfer or reinstatement shall be made from a position in one class to a position in another class, nor shall a person be transferred to or reinstated in a position for original entrance to which there is required by this act or the rules and regulations thereunder an examination involving essential tests or qualifications different from or higher than those required for original entrance to the position held by such person.

SEC. 14. The tenure of every one holding a position under the provisions of this act shall be during good behavior, but any such person may be removed for any of the following causes:

(*a*) Incompetence or inefficiency.

(*b*) Dishonesty, intemperance, immoral conduct, insubordination, discourteous treatment of the public or of fellow employees, a violation of the provisions of this act or of the rules or regulations of the commission or any other failure of good behavior. The appointing power that could fill such positions under the provisions of this act if vacant or the commission may remove, as hereinafter provided, for such cause. The appointing power in so proceeding must furnish to the person holding such position written charges setting forth such ground for removal and file copy with the commission and allow the accused a reasonable time and opportunity to file with the commission and furnish to said appointing power written answer and explanation and thereafter said appointing power shall publicly hear and determine such charges after reasonable notice to the accused and the commission of the time and place of said hearing and affording the accused an opportunity at such hearing to present whatever competent evidence the accused may desire in defense. In case of charges presented by or to the commission, it shall proceed in like manner. A judgment of removal, in writing, setting forth the findings of said appointing power after such hearing and filed with the commission, shall be final and effect such removal and shall not be subject to review by any other tribunal, except that in case of proceedings against the same person before both the appointing power and the commission the judgment against the accused by either the appointing power or the commission shall control a judgment by the other in favor of the accused. Such appointing power may from time to time peremptorily suspend, with loss of salary or other compensation during such suspension, such person for such cause, and without trial, but only upon written charges so furnished to such person and filed with the commission and with the privilege to such person to so furnish to the appointing power and file with the commission written answer and explanation, but such suspension or total suspensions by that appointing power of that person shall not exceed thirty days. Either the appointing power or the commission may transfer charges to the other for action or investigation.

SEC. 15. The commission shall provide by rule for the employment of laborers in the labor class in the order of priority of application for employment. There shall be separate lists of applicants for different kinds of labor, and the commission may provide separate labor registration lists for departments, institutions, districts or localities. The commission may require an applicant for registration to pass such examination as they may deem proper with respect to his age, residence, physical condition, ability to labor, skill, capacity and experience. The commission shall establish such time as it may deem expedient for the duration of eligible lists in the labor class.

SEC. 16. It shall be the duty of each appointing power to report to the commission forthwith upon each appointment the name of the appointee, the title or character of the position, the date of the commencement of such service, and the salary or compensation therefor, and to report from time to time, and upon the date of official action in, or knowledge of each case, any separation of the person from the position, or other changes, and such other information as the commission may require in order to keep the roster hereinafter mentioned. The commission shall keep in its office an official roster of all persons holding positions under the provisions of this act and shall enter thereon the name of each and every person who has been appointed to, promoted, reduced, transferred, reinstated or removed from or left any position and require such evidence as it may deem satisfactory as to whether such person was appointed to, promoted, reduced, transferred, reinstated or removed from such position in accordance with the provisions of this act and the rules and regulations of the commission thereunder and as to when and why and how such person was otherwise separated from such position. The official roster shall show opposite, or in connection with, each name, the date of appointment, promotion, reduction, transfer or

reinstatement, the compensation of the position, the date of commencement of service and change in or separation from position and when and why and how there was such change or separation. The names of all persons holding positions at the time of the taking effect of this act which if vacated would be filled under the provisions of this act shall be certified to the commission by the appointing power that could then so fill such position if vacant, and such names shall be entered in said roster, and thereupon shall be deemed appointed under the provisions of this act and persons then holding such positions who have served in such positions a less period than one year and more than sixty days from the date of the classification of such positions as required by this act shall be deemed to be serving the probationary period, and persons who have served in such positions for less than such sixty days shall be deemed temporary appointees.

SEC. 17. It shall be unlawful for the controller or other fiscal officer of the state to draw, sign, issue, or authorize the drawing, signing, or issuing of any warrant on the treasurer or other disbursing officer of the state for the payment of, or for the treasurer or other disbursing officer to pay any salary or compensation to any one holding any position under the provisions of this act unless the estimate, pay roll or account for such salary or compensation, containing the name of the person to be paid, shall bear the certificate of the commission that the persons named in such estimate, pay roll or account are holding positions as provided by this act and the rules and regulations prescribed thereunder. Any sums paid contrary to the provisions of this section may be recovered from any one making such appointment in violation of the provisions of this act and of the rules and regulations prescribed thereunder or from any officer signing, or countersigning, or authorizing the signing or countersigning of any warrant for the payment of the same, and from the sureties on his official bond in an action in any court of competent jurisdiction of this state maintained by a citizen resident therein, who is assessed for and is liable to pay, or within one year before the commencement of such action has paid, a tax therein. All moneys recovered in any action brought under the provisions of this section must, when collected, be paid into the treasury of the state, except that the plaintiff in any such action shall be entitled to receive for his own use the taxable costs of such action.

SEC. 18. Any commissioner or examiner, or any person who shall wilfully by himself or in co-operation with one or more persons, defeat, deceive or obstruct any person in respect of his or her right of examination or registration, according to any rules or regulations prescribed pursuant to the provisions of this act, or who shall wilfully and falsely mark, grade, estimate, or report upon the examination or proper standing of any person examined, registered, or certified, pursuant to the provisions of this act, or aid in so doing, or who shall wilfully make any false representation concerning the same, or concerning the person examined, or who shall wilfully furnish to any person any special or secret information for the purpose of either improving or injuring the prospects or chances of any person so examined, registered, or certified, or to be examined, registered, or certified, or who shall personate any other person, or permit or aid in any manner any other person to personate him, in connection with any examination or registration or application or request to be examined or registered, shall be deemed guilty of misremeanor.

SEC. 19. No officer, agent, clerk or employee under the government of the state shall, directly or indirectly, solicit or receive, or be in any manner concerned in soliciting or receiving, any assessment, subscription, contribution or political service, whether voluntary or involuntary, for any political purpose whatever, from any one on the eligible lists or holding any position under the provisions of this act.

Every officer, agent, clerk or employee under the government of the state who may have charge or control in any building, office, or room occupied for any purpose of said government is hereby authorized to prohibit the entry of any person, and he shall not permit any person to enter the same, for the purpose of therein making, collecting, receiving or giving notice of any political assessment, subscription or contribution, and no person shall enter, or remain in any said building, office or room, or send or direct any letter or other notice thereto, for the purpose of giving notice of, demanding, or collecting a political assessment, subscription or contribution, nor shall any person therein give notice of, demand, collect or receive, any such assessment, subscription or contribution contrary to the provisions of this section.

SEC. 20. No one, while holding any public office, or in nomination for, or while seeking a nomination or appointment for, any public office, shall use or promise to use, whether directly or indirectly, any official authority or influence (whether then

possessed or merely anticipated) in the way of conferring upon any person, or in order to secure or aid any person in securing any position under the provisions of this act, either in nomination, confirmation, promotion, or increase in salary, or as to any change in any such position, upon a consideration or condition that the vote or political influence or action of the last named person or any other, shall be given or used in behalf of any candidate, officer or party, or upon any other corrupt condition or consideration. And no one, being a public officer, or in nomination for, or while seeking nomination or appointment for, any public office or having or claiming to have any authority or influence (whether then possessed or merely anticipated) for the securing or holding of or as to affecting any position under the provisions of this act, shall use, or promise or threaten to use, any such authority or influence, directly or indirectly, in order to coerce or persuade the vote or political action of any person on the eligible lists or holding any position under the provisions of this act.

SEC. 21. No salary, compensation or other emolument shall be paid to any one appointed to or retained in any position in violation of this act. Any officer approving or paying such salary shall be liable for such sum on his official bond. Whenever the commission shall notify the auditing officer that any position has been filled in violation of this act or any of the rules and regulations thereunder, no demand for the salary or compensation or other emolument of such position shall be approved or paid except upon the order of a court of competent jurisdiction.

SEC. 22. Any person acting in good faith in accepting appointment or employment contrary to the provisions of this act or of the rules and regulations prescribed thereunder, shall be paid by the appointing power the compensation promised by or on behalf of the appointing power or in case no compensation is so promised then the actual value of any service rendered and the expense incurred in good faith under such attempted appointment or employment, and shall have a cause of action against the appointing power for such sum or sums and for the costs of action. No public officer shall be reimbursed by the state or any of its instrumentalities for any sum so paid or recovered in such action.

SEC. 23. No recommendation or question or inquiry under the authority of this act shall relate to the political or religious opinions or affiliations of any person, and no appointment or change in or removal from any position under the provisions of this act shall be in any manner affected or influenced by such opinions or affiliations.

SEC. 24. Witnesses and officers to subpœna and secure the attendance of witnesses before the commission, or any commissioner, or the chief examiner or other authorized agent of the commission, shall be entitled to the same fees as are allowed witnesses in civil cases in courts of record. Such fees need not be prepaid, but the controller shall draw his warrant for the payment of the amount thereof when the same shall have been certified to by the commission and duly proved by affidavit or otherwise to the satisfaction of the controller.

SEC. 25. Any person wilfully violating any of the provisions of this act shall be guilty of a misdeemanor.

SEC. 26. The term veteran as used in this act means and includes any person who has served in the United States army, navy, marine corps, revenue marine service, or as an active nurse in the service of the American Red Cross, or in the army and navy nurse corps in time of war, or in any expedition of the armed forces of the United States, and received an honorable discharge or certificate of honorable active service proof of which shall be submitted to the civil service commission at the time of examination. (As amended statutes of 1921.)

SEC. 27. The civil service commission shall by rule establish preference for veterans as follows: In the case of entrance examinations to establish eligible lists for policemen and watchmen, veterans who become eligible for appointment by attaining the passing mark established for the examination, and whose service as veterans exceeds three months, shall be classified on such eligible lists in the relative order of the individual ratings attained, and ahead of all non-veterans passing such examinations, and shall be eligible for appointment on the basis of such order of standing on such eligible lists.

In the case of all other entrance examinations, veterans with thirty days or more of service, and widows of veterans who were married to such veterans on or before November 11, 1918, who become eligible for appointment by attaining the passing mark established for the examination, shall be allowed an additional credit of five points, which shall be added to the percentages attained in such examinations by such veterans, and they shall be placed on eligible lists and be eligible for

appointment in the order and on the basis of the percentages attained by them in examinations after such credit of five points shall have been added. All ties shall be decided in favor of veterans; *provided, however*, in the case of promotional examinations, a credit of three points shall be allowed to veterans and widows of veterans who were married to such veterans on or before November 11, 1918.

The civil service commission, for specific state services or employments, as determined by the commission, may, in examination, allow general or individual preferences in rating to veterans who have suffered permanent disability in line of duty; *provided*, that such disability would not prevent the proper performance of the duties required under such service or employment, and provided that such disability was of record in the files of the war department as of July 1, 1920.

In the case of examination to establish eligible lists for artisans, and in which credits are allowed for experience as a journeyman, periods of service in the armed forces of the United States, whether as artisan or otherwise, shall be counted by the commission as journeyman experience. (As amended statutes of 1921.)

SEC. 28. It is the purpose of this act to give preference, in the manner set forth in the foregoing section, to all persons who have served the government and the people in the army, navy, marine corps, revenue marine service, or as active nurses in the American Red Cross or the army and navy nurse corps, and particularly to persons who have rendered such service during the Ally-Germanic war, the Spanish-American war, the Philippine insurrection, the Boxer uprising, the Indian wars, or the Civil war. (As amended statutes of 1919.)

SEC. 29. Whenever this act or any part or section thereof is interpreted by a court, it shall be liberally construed by such court. (As amended statutes of 1919.)

SEC. 30. If any section, subsection, subdivision, sentence, clause or phrase of this act is for any reason held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this act. The legislature hereby declares that it would have passed this act, and each section, subsection, subdivision, sentence, clause and phrase thereof, irrespective of the fact that any one or more sections, subsections, subdivisions, sentences, clauses or phrases be declared unconstitutional. (As amended statutes of 1919.)

SEC. 31. All acts and parts of acts inconsistent with this act are hereby repealed in so far as they are inconsistent with the provisions of this act.

APPENDIX VI.

RULES AND REGULATIONS OF THE STATE CIVIL SERVICE COMMISSION.

RULE 1.

SECTION 1. *"Qualifications."* Applicants must be citizens of the United States and they must be between the ages of 21 and 60 years unless otherwise specified by the Commission at the time of the announcement of the examination.

SEC. 2. *Character and Fitness.* Every applicant must be of good moral character, of temperate habits, and in all respects physically competent to perform the duties of the position applied for.

RULE 2.

Applications.

SECTION 1. All applications must be made upon official blanks furnished by the Commission and filled out as therein directed.

Applicants taking more than one examination must file a new and complete application for each such examination.

SEC. 2. *Applicants to Present Credentials.* Wherever written examinations are required, each applicant whose application has been approved shall be notified through the post office of the time and place of the examination, and such notice shall be the credential of the applicant to take the examination.

SEC. 3. *Applicants for Positions as Laborers.* Applicants for laborers' positions must not be over sixty years of age. Laborers shall be appointed according to priority of application, but all such applicants shall be examined as to age residence, physical condition and experience, and must be found to be in good physical condition and with the capacity to perform hard manual labor.

Separate lists of applicants shall be made for laborers for Sacramento, San Francisco, and Los Angeles. The names of those laborers on the list for Sacramento shall be drafted for positions nearest Sacramento; names of those laborers on the list for San Francisco shall be drafted for positions nearest San Francisco; and the names of those laborers on the list for Los Angeles shall be drafted for positions nearest Los Angeles. When any of these lists become exhausted, names may be certified from the other lists.

All applications for laborers' positions must be on forms furnished by the Commission, and shall take precedence according to their reecipt in the office of the Commission at Sacramento, each application being given a serial number in the order of its receipt by the Commission.

RULE 3.

Applications not to be returned.

Applications and accompanying vouchers not returned for correction shall remain on file in the office of the Commission, and in no circumstance will be returned to applicants.

RULE 4.

Examinations.

SECTION 1. *Examinations to be Free.* All examinations shall be conducted under the supervision of the Executive Member of the Commission without any cost or expense to any applicant, except for a medical or physical examination when required.

SEC. 2. *Questions Placed Under Seal After Approval.* All examination questions shall be first approved by the Executive Member of the Commission. The examination questions after approval shall be securely sealed with the official seal

of the Civil Service Commission. The seal shall not be broken until the beginning of the examination, and then only in the presence of all the candidiates at the examination and the authorized agent of the Civil Service Commission.

SEC. 3. *Explanations.* All necessary explanations will be made to the whole class. No question will be explained to any individual candidate. Examiners are forbidden to explain the meaning of, or to make remarks relating to, any question that may assist in its solution.

SEC. 4. *Conversation During Examinations.* Communication between candidates during examination is strictly forbidden.

SEC. 5. *Leaving the Examination Room.* During an examination no candidate will be permitted to leave the room, except in case of extreme necessity, and then only with a representative of the Commission. A luncheon recess may be allowed, however, at the direction of the Commission.

SEC. 6. *Limit of Time.* The limit of time prescribed for such examination will be stated before the examination and shall begin to run when announcement is made by the examiner in charge.

SEC. 7. *Helps.* Candidates are forbidden to receive aid from a fellow candidate or to use helps in any form. Before the commencement of an examination candidates will be required to hand to the examiner any printed or written matter in their possession that might serve to aid them in the examination. Evidence of copying or collusion may result in the cancellation of examination papers and the debarment of the candidate from future examinations. Copies of the questions in the examination may not be made or taken from the examination room.

SEC. 8. *Rating of Examinations.* All examinations shall be rated on a scale of 100, and the relative weights of the different subjects, including experience, shall be determined by the Executive Member of the Commission at the time of the announcement of the examination.

SEC. 9. *Rating of Examination Papers.* Where written examinations are required they shall be so managed that no examination papers will disclose the name or identity of any applicant until all the examination papers shall have been marked.

Each candidate must write his name and address upon a declaration sheet, which must have printed upon it a serial number, to be known as his examination number.

The candidate shall mark upon each examination sheet his examination number. When the examination papers have been rated the declaration sheet shall be unsealed and the examination papers assigned to the name of the person who wrote them.

So far as practicable, questions on different subjects of examination shall be answered on separate sheets and all the answers on a given subject shall be rated by the same examiner. Where the number of examiners will permit, the answers shall be redistributed by subjects for review by other examiners after being rated in the first instance.

SEC. 10. *Identification Marks.* Any candidate in any examination who places an identification mark upon his examination papers, other than his serial number, may be deprived of all benefits under such examination.

The following are marks of identification within the meaning of this rule: Name or address of the candidate; any assumed or fictitious name or address; any initials, lines or other characters that might indicate the identity of the candidate.

SEC. 11. *Marking and Grading of Papers. Relative Weights, and Method of Determining Average Percentage.* The relative weight of each subject shall be fixed and announced by the Executive Member of the Commission, and all examination papers shall be marked and graded under the regulations of said Executive Member. When, during the marking and grading of the papers, it becomes apparent that a candidate, whose papers have been partially marked, would receive a general average percentage less than the minimum percentage for eligibility fixed by said Executive Member, or if the candidate receives less than the minimum percentage required on a given subject, then such candidate shall be considered as having failed and the marking of his papers need not be completed.

The different subjects in each examination are given relative weights according to their importance. These weights represent the value of each subject in the whole examination. The method of obtaining the average percentage of the examination is as follows: Multiply the rating obtained in each subject by the relative weight of that subject, add the products, and divide the sum of the products by the

sum of the relative weights. The quotient thus obtained will be the average percentage for that examination.

When an examination is being held for any given position, it shall be within the province of the examiner to pass an applicant for a position in a lower grade of the same class, if in the opinion of the examiner the applicant is qualified to fill the lower grade position, but not qualified to fill the higher grade position.

SEC. 12. *Minimum Standing.* Candidates shall be required to attain a general average of not less than 70 per cent in order to pass an examination, except that in promotional examinations candidates shall be required to attain a general average of not less than 85 per cent in order to pass. (As amended May 13, 1924.)

SEC. 13. *Notice of Result of Examinations.* As soon as the marking and grading of the papers shall have been completed and the eligible registers established, each candidate shall be notified through the post office of his general average percentage and relative standing obtained upon examination.

Where the marking of the examination papers has not been completed because the candidate has failed in any given subject, he shall be notified of that fact.

SEC. 14. *Appeal for Review.* Any applicant may appeal to the Executive Member of the Commission to have his examination papers reviewed on the ground of errors committed therein, if said appeal is made in writing within thirty days after receiving announcement of the result of the examination. Upon a review of the examination papers of the applicant, his rating may be changed in accordance with such review. If, in the judgment of said Executive Member, such review discloses errors on the part of the examiner affecting the examination papers of all the applicants, then all the examination papers may be reviewed.

SEC. 15. *Veteran Preference.* To be entitled to veteran preference as provided for in section 27 of the Civil Service Act, applicants must file with the Civil Service Commission the original or certified copy or photograph copy of honorable discharge papers or of certificate of honorable active military service. Such papers must be filed with the application for examination in the office of the Civil Service Commission prior to the date of the examination.

RULE 5.

Eligible registers.

SECTION 1. Successful candidates shall be enrolled upon the register of eligibles in the order of their general average percentage upon examination without regard to priority of application or examination, except that two or more candidates receiving the same percentage shall be enrolled according to the percentage attained in the chief essential of the examination, and with the further exception that if one of the candidates so rated be a veteran he shall be given the preference.

SEC. 2. Successful candidates may be enrolled upon two or more eligible registers at the same time.

RULE 6.

Certifications.

SECTION 1. *Vacancies.* Whenever a vacancy is to be filed the appointing power shall notify the Executive Member of the Commission of that fact, stating the duties of the position.

SEC. 2. *Three Names to be Certified.* The said Executive Member shall then certify to the appointing power the names and addresses of three persons who stand highest on the eligible list for the sub-class or grade to which the position belongs. In case there are less than three upon such eligible list there shall be certified the number thereon and the appointing power shall fill the position by the appointment of one of the persons so certified. Where the employment is for a period of sixty days or less, only those names of eligibles who live in the vicinity of the employment may be certified.

If an appointing power have at the same time more than one vacancy in the same sub-class and grade to be filled, as many names as there are vacancies, and two names in addition to the total number of such vacancies if there be that number of names on the register, shall be certified in the manner previously set forth.

The appointing power shall fill the first vacancy by the selection of one of the highest three eligibles so certified. The second, and any succeeding vacancy, shall be filled in like manner by selection in turn from the highest three remaining names.

If, in any case indicated, there be no additional name or names on the register, or if the number of names which can be certified or which are finally available for appointment be less than the number specified in this rule but at least equal to the number of vacancies to be filled, then the required selection shall be made from the names certified and available.

SEC. 3. *Next in Rank After Waiver.* Whenever an eligible has been certified to the appointing power, and such eligible waives appointment, the secretary shall forthwith notify the appointing power of such waiver and certify the next highest eligible, whereupon said next highest eligible shall have the same standing as though originally certified.

SEC. 4. *New Positions.* Whenever a new position is created, the appointing power who may fill such position shall immediately make requisition upon the Executive Member of the Civil Service Commission for an eligible to fill the position, and shall at the same time furnish said Executive Member with a detailed statement of the duties attached to said position. It shall then be the duty of the Executive Member to classify said position and certify eligibles in accordance with the provisions of section 2 of this rule.

SEC. 5. *Examination Papers to be Forwarded With Certification.* Upon the certification of eligibles to any appointing power to fill a vacancy, the examination papers of the eligibles shall be transmitted with the notice of certification if required by the appointing power. Within ten days thereafter all examination papers must be returned to the office of the Commission by the appointing power.

RULE 7.

Failure to respond.

SECTION 1. Any eligible who fails to respond within a reasonable time after notice has been sent him to report for duty will be stricken from the eligible register, unless, within thirty days from the date of the notice sent him, he presents reasons satisfactory to the Executive Member of the Commission for his failure to report.

When the eligible resides in the city from which the notice has been sent three days shall be deemed a reasonable time in which to respond. When the eligible resides in some other city or county the time consumed in transmission of the letter to his place of residence and return shall be added to the three days.

SEC. 2. Any eligible who fails to respond within a reasonable time after any notice sent him by the Executive Member of the Commission requiring an answer will be stricken from the eligible register, but may be restored if at any time during the period of his eligibility he presents reasons satisfactory to the said Executive Member for his failure to respond.

RULE 8.

Declination and waiver of certification.

SECTION 1. An eligible may at any time have his name temporarily withdrawn from the eligible register upon giving reasons in writing satisfactory to the Executive Member of the Commission, and his name may be restored thereto at the discretion of the said Executive Member upon written application of the eligible during the period of his eligibility.

SEC. 2. An eligible may, when his name is reached for appointment to a temporary position, waive certification without losing his position upon the eligible register. A temporary position is one that will last for less than six months.

SEC. 3. Whenever an eligible has indicated the locality or institution in which he will accept employment, he may decline certification to positions in other localities or institutions, without losing his position upon the eligible register.

An eligible may decline appointment after certification without losing his position upon the eligible register for any reason satisfactory to the said Executive Member.

In the event of an absolute refusal of a permanent position by an eligible for reasons that are not satisfactory his place upon the eligible register shall be declared vacant and his name shall be removed therefrom. The said Executive Member

may in his discretion, however, restore his name to the eligible register for the remaining period of his eligibility upon his written application therefor.

RULE 9.

Appointments.

SECTION 1. *Probationer.* A probationer is one who having been certified and appointed after examination has been employed less than six months.

The probationary period for any appointment is hereby fixed at six months.

SEC. 2. *Permanent Appointments.* A permanent appointee is one who having been a probationer, has served more than the required probationary period of six months.

SEC. 3. *Temporary Appointments.* A temporary appointee is one who has been appointed to a position without examination, and with the previous consent of the Executive Member of the Commission.

Whenever a position is to be filled, the appointing power must make application in writing to the said Executive Member to fill the same by the certification of eligibles in accordance with section 9 of the Civil Service Act.

When there are no eligibles from which to fill the position, the Executive Member of the Commission may authorize the appointing power to fill such position by temporary appointment, such temporary appointment to continue until such time as they are eligible but not to exceed ninety days from date of appointment. Until such permission has been given no authority exists in the appointing power to make a temporary appointment.

Upon making the appointment it will be incumbent upon the appointing power to notify the said Executive Member, naming the appointee, the title and character of the position, the date of commencement of service, and salary or compensation thereof, as required by section 16 of the Civil Service Act.

SEC. 4. *Emergency Appointments.* Emergency appointments are those made notwithstanding there may be an eligible list, for the reason that eligibles are not immediately available. In certain departments of the state men are employed and discharged almost daily, but they are at such great distance from the heads of their departments that in some cases word can not be either sent to or received from them for several days. In order to prevent the stoppage of public business when the necessity of making short-time appointments exists, permission is hereby granted to the appointing power in any department of the State Civil Service to make emergency appointments for not more than fifteen working days. The name of the appointee, the duties of the position, the nature of the emergency, and the further data required by section 16 of the Civil Service Act must be mailed to the office of the State Civil Service Commission.

Where the appointing power is sufficiently near Sacramento to make application for a temporary appointment with the previous consent of the said Executive Member, a resort to emergency appointments will be deemed an abuse of the privilege of this rule.

Emergency appointments may not be continuous.

RULE 10.

Report of appointment.

Whenever the names of three eligibles have been certified to the appointing power to fill a vacancy, it shall be the duty of the appointing power to make the appointment forthwith. It shall also be the duty of the appointing power to make immediate report to the office of the Commission of the fact of appointment.

RULE 11.

Efficiency records.

In all offices and places of employment subject to the Civil Service Act, the appointing power shall make records of the individual efficiency of holders of positions in performing their duties and shall file such records monthly with the office of the Civil Service Commission on or before the fifth day of the month succeeding that in which the records were made.

The efficiency records shall be rated upon:

First. Quality—Meaning the ability of an employee to perform the task to which he or she is assigned, and the degree of excellence attained in its performance. Cognizance should be taken of such qualities as neatness of work, originality, resourcefulness, initiative, sense of order, system, judgment, tact, special knowledge, technical ability, mechanical skill and ability to direct work and to manage men.

When "temperamental qualities" determine the usefulness of employees, as in the case of teachers in a reform school, or nurses in an institution, "temperamental aptitude" shall be rated under quality.

Second. Quantity—Meaning the amount of work done. In cases where the work is not measurable, ratings should be on alertness, or promptness, speed, industry, perseverance, energy, diligence and willingness to work.

Third. Discipline—Including treatment of the public, treatment of fellow employees, sobriety, obedience to rules, and personal neatness.

Fourth. Attendance—Including absence and punctuality. Quality and quantity of work shall be rated on a percentage basis. The grading shall be as follows:

For excellent or exceptional work	90–100
For good or thoroughly satisfactory work	80– 90
For fair or not wholly satisfactory work	70– 80
For poor or unsatisfactory work	70 and below

Eighty-five per cent is arbitrarily taken by the Civil Service Commission as the marking for an average employee doing thoroughly satisfactory work.

Where markings above 90 per cent or below 70 per cent are reported, an explanation should accompany, stating briefly the reason therefor. The Civil Service Commission retains the right to investigate such ratings before entering them upon its records.

Attendance shall be recorded by demerits:

Tardiness—1 demerit for 5 minutes or less; 3 demerits for more than 5 minutes and not exceeding one hour; 5 demerits for more than one hour.

Absence without leave—5 demerits for each day, same to be noted by an accompanying star (*). (Absence without leave for one or more days in any one month shall be cause for investigation by the Civil Service Commission.)

Absence with leave not exceeding 15 days, half a demerit for each day of said period; 1 demerit for each day in excess thereof. A period so penalized shall not be for more than one month. Absence on sick leave not exceeding 30 days, half a demerit for each day.

An employee is considered present when detailed on special work and during his vacation.

No efficiency credit shall be allowed for overtime work.

Discipline shall be recorded in demerits:

Penalties to be given for laxity in observance of or violation of established rules and regulations, failure to report, incivility, deportment, manner, inebriety, indolence, personal neatness, and habits. If suspension is imposed for disciplinary purposes, the demerits under "discipline" shall be as follows:

For a suspension of 1 day	10 demerits
For suspension of more than 1 day and less than 7 working days	15 demerits
For more than 6 and less than 13 working days	25 demerits
For more than 12 and less than 28 working days	40 demerits

When demerits are so made, there shall not be any penalty under "attendance" for the suspension period.

The total demerits reported with any individual record shall be added, the sum divided by 5 and the result subtracted from the average marking for quantity and quality of work. The remainder shall be entered on the report as the net efficiency.

If the net efficiency of any employee falls below 70 for any one month, the secretary of the Commission may file a charge of inefficiency against such employee with the Civil Service Commission. If such charge is filed, it shall be the duty of the Civil Service Commission to try the said employee for inefficiency. If, after such trial, it shall find the ratings to be just, the Civil Service Commission shall enter judgment, removing the said employee from the civil service of the State of California, and his name shall be stricken from the list of eligibles.

In case the net efficiency of an employee shall fall below 80 continuously for three months, the Executive Member of the Commission may reduce the salary or grade of such employee.

The efficiency records of any office or department shall be made upon a letter-size form, at the left of which shall be a column for the names of the employees in the said office or department arranged alphabetically. In the first column to the right of the name shall be written the name of the position; in the second column the salary paid; in the third column shall be rated the attendance; and it shall be in a double subcolumn in the first of which shall be recorded demerits for tardiness, and in the second shall be recorded the demerits for absence; in the fourth column shall be recorded discipline demerits; in the fifth column shall be rated quality of work; in the sixth column shall be rated the quantity of work; and three columns shall be left at the extreme right for noting the average positive per cent rating, the total number of demerits and the net efficiency.

The appointing power shall require the immediate supervisor of the persons whose efficiency records are being made up to certify to the appointing power, the record for the quantity and quality work, discipline and attendance. From the record thus transmitted to the appointing power or its authorized agent by the said immediate supervisor, the appointing power or its authorized agent shall cause to be made the entries in the efficiency records to be submitted to the office of the Civil Service Commission. A copy of said record shall be kept in the office of the appointing power.

RULE 12.

Leaves of absence.

SECTION 1. *Vacation.* (*a*) To be entitled to a vacation with pay, an employee must have been employed continuously at least six months. He is then entitled to a vacation of fifteen full working days during the first year of service.

(*b*) The vacation period must be during his period of service—that is to say, he must not have resigned to take effect during his year of service, or been dismissed from the service of the state. The time of the vacation is in the discretion of the appointing power unless the appointing power fails or neglects to give the employee a vacation until the last fifteen working days of the year's service, in which case the employee shall be entitled, as of right, to a vacation during said last fifteen working days of the year's service.

(*c*) An employee may resign, to take effect at the end of his year of service, and would be entitled to his vacation during the last fifteen days of his year of service notwithstanding.

(*d*) If an employee resigns to take effect before the end of his year of service or is dismissed, before he has enjoyed his vacation, he is not entitled to a vacation.

(*e*) In computing working days, Sundays and holidays should not be included. Saturday is a working day.

(*f*) Such a vacation shall not be cumulative; that is, of not taken one year, the employee will not be entitled to thirty days the next year.

SEC. 2. *Sick Leave.* (*a*) When a state employee is prevented by sickness from reporting for duty, or when some member of his family is afflicted with contagious disease, as a result of which his presence in the service would jeopardize the health of fellow employees, he must immediately send notice thereof to his superior, and thereafter he shall be granted sick leave.

(*b*) Employees claiming sick leave must furnish the Executive Member of the State Civil Service Commission with a medical certificate showing that they have been actually disabled from performing work, and from and to what dates. Where the person claiming sick leave is working at an institution where the state has physicians employed, the certificate may be made by any such physician. Those working in a department where a physician is not employed must furnish a certificate from some responsible physician. Certificate forms may be secured from the office of the Civil Service Commission and must be approved by the appointing power before forwarding to the office of the Civil Service Commission. Where the leave is for five days or less the certificate may be signed by only the appointing power, if he so elects.

(*c*) If an employee has held a position in the state service continuously for six months immediately preceding sick leave, he may upon the recommendation of the

appointing power, be granted full pay until recovery, provided the same shall not exceed seven days.

(*d*) If an employee has held a permanent position in the state service continuously for one year immediately preceding sick leave, he may upon recommendation of the appointing power, be granted full pay until recovery, providing the same shall not exceed fifteen days, upon proper showing made to the Civil Service Commission.

(*e*) In exceptional cases, upon proper showing to the Civil Service Commission the leave may be extended for a total of thirty days at full pay and thereafter sixty days at half pay; no leave, however, shall, exceed ninety days in any year of service.

(*f*) Where an employee of the state is incapacitated by an accident and claims compensation under the act of the legislature, approved May 23, 1917, he shall not be entitled to the benefit of sick leave with pay.

(*g*) Sick leave shall be reckoned upon calendar days for monthly employees, and upon working days for per diem employees.

SEC. 3. *Special Leave.* Leave without pay, if requested in writing by a state employee, may be granted for a period of not to exceed one year, if recommended by the appointing power and approved by the Executive Member of the Civil Service Commission; *provided*, that leave of absence for less than thirty days may be granted by the appointing power without the approval of said Executive Member.

SEC. 4. *Reemployment after Leave.* A position shall be held open for an employee when on sick leave for ninety days or when on a special leave for not exceeding thirty days. When an employee is absent on special leave exceeding thirty days he shall not be entitled as of right to be restored to the position he formerly occupied, except on the request of the appointing power and approval of the Executive Member of the Civil Service Commission. He shall, with the approval of the said Executive Member, be entitled, unless restored to the position he formerly occupied, to have his name placed on the general lay-off list, or on the eligible register of his sub-class and grade in accordance with his original percentage, provided he shall not be considered for appointment until at least ninety days from the time at which he entered upon leave have expired.

RULE 13.

Absence without leave.

SECTION 1. Absence from duty without leave for any time will be considered good cause for dismissal.

SEC. 2. Absence from duty without leave for ten consecutive days shall be deemed a resignation from the service by the absentee, and upon the report of such absence by the appointing power to the Civil Service Commission, the absentee shall be removed from the service of the state, and the fact of removal shall be entered in the official roster; *provided*, that if at any time within thirty days the person so absenting himself shall make satisfactory explanation to the Executive Member of the Civil Service Commission of the cause of his absence he shall be restored to his position.

RULE 14.

Reduction in force.

SECTION 1. Whenever it becomes necessary to reduce the number of employees in a given sub-class they shall be laid off by the appointing power according to their relative efficiency, the least efficient being laid off first, and their names shall be entered upon the departmental lay-off list, which list shall be immediaaely filed with the Civil Service Commission. Employees laid off shall be reemployed in the order of their relative efficiency. The Executive Member may make separate provision for the reemployment of persons having special qualifications.

SEC. 2. Employees desiring reemployment in other departments may request that their names be placed upon the general lay-off list for their sub-class and grade. Their names shall be entered upon such list in accordance with their records of service and efficiency, as may be determined by the Executive Member of the Commission. If the record of service of an employee does not justify the placing of his name upon the general lay-off list, his request may be denied; or, in the

discretion of the Executive Member, his name may be restored to the eligible list with his original percentage. Cetrification from the general lay-off list will be made in advance of and in the same manner as from the eligible register. Where, however, there are less than three names upon any general lay-off list, a sufficient number of names to make three shall be added from the eligible register for the same sub-class and grade. Any name on any lay-off list may be removed therefrom at any time after one year by the Executive Member of the Civil Service Commission.

SEC. 3. Whenever a probationer shall be laid off for lack of work he may be assigned to work suitable to his sub-class and grade in any other department of the state service. The probationer shall have credit for the time he may have served until he shall have served six months in all. No distinction shall be made between a probationer and a permanent employee when making lay-offs, but in all cases the appointing power shall be guided by the relative efficiency of the persons laid off. The names of those laid off during their probationary period shall be restored to the eligible list in accordance with their original percentage, unless the Executive Member elects to place the names of such persons upon either the departmental or general lay-off lists.

RULE 15.

Transfers.

SECTION 1. Transfers, as provided by section 13 of the Civil Service Act, may be made by the appointing power only with the previous consent of the Executive Member of the Commission.

SEC. 2. Eligibles appointed after examination to fill a position in a given class may not be transferred to positions in another class.

SEC. 3. No employee who has occupied a position for thirty days after appointment from the eligible list and whose services during that time have been satisfactory, shall be compelled by the appointing power to report for duty in another part of the state without the consent of the Executive Member of the Commission. (As amended September 18, 1923.)

NOTE.—The Civil Service Commission does not take the initiative in arranging transfers. Employees desiring transfers should take the matter up with the head of their department, and with the head of the department to which they wish to be transferred.

RULE 16.

Resignation or relinquishment of position.

SECTION 1. When a civil service appointee desires to resign his position he shall present his resignation, in writing, to the power that appointed him, and a copy of such resignation shall immediately be filed by the appointing power with the Civil Service Commission, together with a statement from the appointing power of the action taken thereon. An appointee so resigning from the service may within one year, with the recommendation of appointing power, be reinstated to the position from which he was separated or a similar position in the same department if there be need for his services, upon petition to and favorable action by the Executive Member of the Civil Service Commission.

SEC. 2. The Executive Member of the Commission may, when in his judgment there appear good and sufficient reasons, permit a civil service appointee to relinquish his position and place his name upon the general lay-off list, provided such appointee shall make application for such action in person or in writing; *and provided, further*, that if such an appointee be permitted to relinquish his position under this section he shall not again be considered for any appointment in the class he vacated until at least 90 days thereafter have expired, nor shall he ever again be considered for reappointment to the same department to the kind of position he relinquished except with the consent of the appointing power.

SEC. 3. An appointee to a temporary position as defined by rule 8 of section 2, may, with the consent of the appointing power, and the Executive Member of the Civil Service Commission, be permitted to relinquish such position and such relinquishment shall be deemed to be a waiver of all other temporary employments until a withdrawal of waiver is filed with and acted upon by the said Executive Member.

RULE 17.

Promotions.

SECTION 1. *Method of Promotion.* Vacancies in positions, unless filled by reinstatement or transfer, shall be filled so far as practicable by promotion from among persons holding positions in the next lower grade of the department, office, or institution in which the vacancy exists. An increase of salary beyond the grade of the position occupied shall be deemed a promotion.

Promotion shall be based upon merit determined by competitive examinations and by the superior qualifications of the person promoted, as shown by his record of efficiency. Applicants for promotional examination must have permanent standing in the next lower grade of the class in which the position to be filled by promotion exists, and must have occupied a position in such lower grade for at least six months immediately preceding the date of the examination. Applicants for promotional examinations shall register in the office of the Commission at least three days before the date fixed for the examination. (As amended September 18, 1923.)

The recommendation of the appointing power, with reasons for the recommendation, shall be a factor in all promotional examinations, and shall be given a rating to be determined by the Executive Member of the Commission upon the announcement of the examination.

Whenever a vacancy is to be filled by promotion, and the number of applicants in the next lower grade who present themselves for examination are so few that in the judgment of the said Executive Member the good of the public service requires that such promotion shall be open to all employees in the lower grades of that class, he shall so declare and notify all employees in such lower grades that such examination will be held and of their eligibility, and shall proceed to hold an original competitive examination to fill such positions.

SEC. 2. *Salary Increases.* (*a*) Advancement of salary within each subclass and grade shall be based upon efficiency and length of service, and the rate of advancement or the amount of salary increase shall be in accordance with the salary schedule established for each such subclass and grade in the classification of positions of the Civil Service Commission.

(*b*) Advancement of salary for efficiency and length of service shall not be made oftener than semi-annually, preferably on January 1, and July 1, of each year, except in emergency cases presented to and approved by the Executive Member of the Civil Service Commission. (As amended October 8, 1923. November 20, 1923.)

SEC. 3. An employee who resigns from the service or who takes a leave of absence for more than thirty days, after having passed a promotional examination, shall be considered as having relinquished his right to promotion, and his name shall be stricken from such promotional list. Such employee's name may, if the employee requests it in writing, be placed upon the eligible list for the same class and grade in accordance with the percentage rating attained in the promotional examination. (As amended October 13, 1923. November 20, 1923.)

RULE 18.

Trials and dismissals.

SECTION 1. Charges under section 14 of the Civil Service Act may be made by the appointing power or its representative, the Civil Service Commission or its representatives, or any citizen.

Such charges shall be tried either by the appointing power or the Civil Service Commission, and shall be instituted by serving upon the defendant a written complaint setting forth the grounds for removal with such particularity as shall enable the defendant to understand clearly the charges made against him, and filing with the Civil Service Commission a copy thereof.

Within ten days after service upon him of the complaint, the defendant shall file with the Commission and furnish to the prosecutor a written answer thereto.

The appointing power, in case the charges are to be heard by it, shall then notify the defendant and the Civil Service Commission of the time and place of hearing of said charges, and in case the Civil Service Commission shall hear said charges it shall notify the defendant and the prosecutor of the time and place of hearing said charges.

The time of hearing shall not be less than five nor more than ten days from the service upon the prosecutor of the answer of the defendant.

The defendant at such hearing shall have opportunity to present whatever competent evidence he may desire in his own defense and shall have the right to be represented by counsel. Failure to file an answer within the time allowed shall be construed as an admission of the truth of the charges by the defendant, and judgment of removal shall be entered forthwith and filed with or by the Commission.

Either the appointing power or the Commission may transfer charges to the other for action or investigation.

SEC. 2. The hearing of charges may be by the Commission, any commissioner, the chief examiner or any other agent of the Commission as it may direct, or the appointing power.

SEC. 3. Any civil service appointee dismissed from employment after trial shall be removed forthwith from all eligible lists and shall not be eligible for examination thereafter without the consent of the Commission. Any eligible or appointee convicted of a felony shall be dismissed from the service of the state and shall have his name stricken from all eligible registers.

RULE 19.

Where any position involves the handling of cash an eligible certified to such position and appointed by the appointing power may be required to furnish a bond in the sum nominated by the appointing power and approved by the Executive Member of the State Civil Service Commission.

RULE 20.

Regular and special meetings.

Regular meetings of the Civil Service Commission shall be held on the second Tuesday of every month in the office of the Commission in Sacramento, at 1.30 o'clock p.m.

Special meetings may be called at any time by the president or by a majority of the commissioners, provided forty-eight hours' notice of such special meeting be given to all members of the Commission. A notice of each special meeting shall state the business for which said meeting is called, but any other business may be transacted at such meeting. Ordinary parliamentary rules shall govern the deliberations of the Civil Service Commission.

RULE 21.

Public inspection.

All the books, records, answers and papers pertaining to examinations or other proceeding shall be open to the inspection of any citizen.

RULE 22.

Amendments to rules.

The rules of the Civil Service Commission may be amended at any meeting.

RULE 23.

Classification.

The provisions of the classification of positions of the Civil Service Commission and the salary schedule established in connection therewith shall have the same force and effect as the rules and regulations of the Commission and shall be considered a part of said rules and regulations. (As amended October 8, 1923, and November 20, 1923.)

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REPORT

OF THE

California State Board of Equalization

FOR

1923-1924

STATE BOARD OF EQUALIZATION

CALIFORNIA STATE PRINTING OFFICE
FRANK J. SMITH, Superintendent
SACRAMENTO, 1924

34719

THE STATE OF CALIFORNIA HAS LOST AN EXEMPLARY PUBLIC SERVANT.

Hon. John Mitchell, a member of this Board, died at his home in Oakland on October 1, 1924.

In the death of John Mitchell, who for fourteen years had been a member of this Board, the State of California lost an official, than whom she had none more honorable, more conscientious, more loyal, nor more fearless, in the discharge of duty.

John Mitchell measured every duty by the creed that: "We are not bound to win, but we are bound to do right as God gives us to see that right," and his every act was determined accordingly.

He has left to his family a heritage greater than riches, a life record of an unflinchingly honest and conscientious discharge of public duty, a radiant example of loyalty, devotion and helpfulness as broad as his opportunity, of which thousands can say: "I am better for his having passed this way."

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REPORT OF THE STATE BOARD OF EQUALIZATION.

To his Excellency, FRIEND WM. RICHARDSON,
Governor of California.

SIR: In compliance with law, the State Board of Equalization herewith submits its biennial report covering the assessment years 1923 and 1924, together with a summary of the status of tax litigation and a summary showing the first effects of the administration of the new Motor Vehicle Fuel License Tax and the Motor Transportation License Tax Act, adopted by the 1923 legislature, as well as other topics relating to and affecting revenue.

RAILROAD SUITS AGAINST THE STATE.

In our report for 1921 and 1922 we set forth at length the facts with relation to the suit of the Southern Pacific Company and The Atchison, Topeka and Santa Fe Railway Company against the state to avoid the increased tax provided in the rate raise passed by the 1921 legislature. The fundamental facts underlying the disputed points in these suits have not changed except as they have been cleared up by the District Federal Court decision. Trial of the cases was had in the District Federal Court which rendered its decision in favor of the state's contention. The railroad companies appealed and the case is now on appeal in the United States Supreme Court. It is set for hearing and will be argued early in 1925 and we confidently expect that the court will give its decision very soon thereafter. If this presumption be correct, the money involved should be received, if at all, during the year 1925.

We advised in our previous report that these cases involved pretty generally the fundamentals of the present tax system and that a decision in them would no doubt go a long way to clear up such questions as remain with relation to its proper application. The District Federal Court did this to the extent that it held that "the state having classified its properties for taxation, was at liberty to fix different tax rates or different tax burdens upon the different classes," in other words, that no equalization as between the tax on general properties taxed on an *ad valorem* basis and public utility properties taxed on the gross receipts basis was necessary, that the state through the legislature could purposely fix an unequal burden as between those two classes, if it found it advisable to do so.

This the court said still held true even though a part of the taxpayers in the higher burden class might be engaged in interstate commerce so long as the excess burden did not reach a point sufficient to hamper or interfere with the carrying on of that commerce. The court did not and could not fix the exact point at which this would occur indicating that it would be governed by circumstances.

In order that there might be no unsettled point in the case, the court went further and held that if its first finding "that equality is not necessary" should be determined to be untenable; that it also found and so gave its judgment and decision that such unequality as does exist

under the rates fixed in the legislative act of 1921 in favor of so-called common properties and as an added burden upon utility properties was not sufficiently broad to warrant a court in disturbing it, since the legislature had held hearings and provided itself with information for the avowed purpose of equalizing the tax burdens and had declared that that was the result of its findings, the presumption being that it made an honest attempt to do so.

In order that the exact position of the state, as the court outlined it, might not be misunderstood, a statement of the following facts seems indicated. In the decision above quoted from, the court made it plain that—

First—The state's finding as presented to the court through the State Board of Equalization that the average tax burden on general property in the state was $1.74 plus, was somewhat more than was warranted and to that extent too favorable to the state.

Second—That the banks and corporations findings that the average tax burden upon each $100 of general property so-called, was less than $1.60, was on the other hand less than was justified and accordingly too favorable to the utilities, and gave as its opinion that a point between these two would be a correct one.

Third—That the values of railroad property as found by the state were also excessive and favored the state's contention too greatly.

Fourth—That the corporations values of their own property as well as those of Professor Plehn, the railroad expert, were too low and accordingly too much in favor of the contention of the corporations and expressed his judgment that a composite value, taking into consideration the result of the various methods used both by the state and the corporations, would be more nearly correct.

Fifth—That the railroad companies were paying more tax per $1 of value or carrying a higher tax burden according to value than was true of so-called common or *ad valorem* properties, but not sufficiently so to warrant a court in disturbing it even if equality were required, since it was the result of an honest endeavor on the part of the legislature to equalize the two.

Sixth—While the state had fixed and could fix a different and higher tax burden on public utility property, if it so desired, that the spread of difference where interstate operators were concerned must not be great enough to disturb their interstate activities.

Taxes from Corporations, Seventy-fifth and Seventy-sixth Fiscal Years.

(As shown by state tax rolls.)

	1923 Tax	*192¼ Tax*
From electric and street railways	$2,878,794 54	$3,186,341 52
From steam railroads	11,861,579 12	13,081,443 38
From gas and electric companies	7,918,132 26	8,598,900 70
From telegraph and telephone companies	2,205,400 24	2,489,565 92
From car companies	256,112 24	323,245 20
From express companies	102,381 78	106,775 68
From insurance companies	3,618,731 42	4,396,657 66
From national banks	1,599,809 50	1,483,915 02
From state banks	2,257,400 20	2,652,157 18
From general franchises	3,497,012 00	3,931,996 00
	$36,195,353 30	$40,250,998 26

INSURANCE LITIGATION.

Since our last biennial report, the Supreme Court has rendered a decision adverse to the state on a part of the questions involved in the litigation with insurance companies. It was held in this decision that the item of dividends applied to reduce insurance premiums was not "receipts" by the company and therefore not taxable. The remaining questions involved in this litigation have been settled between the Attorney General and the insurance companies and no further adjudication will be required therein. This settlement will necessitate the return by the state to insurance companies of the amount of tax upon such sums as have been reported in the item of dividends either paid in cash or applied to reduce annual premiums. The amount of such refunds has not been determined. The Insurance Commissioner is now making a check from his record for this purpose.

The total amount involved in these suits is $1,698,814.46 but the total of refunds should be considerably less than half of this sum for the reason that only a part of the insurance companies' contentions were upheld in the decision. This represents an obligation that has been accruing against the state since 1912 and is on account of moneys paid in and used during previous administrations except such of it as attaches to the single year 1923, but notwithstanding that it is a debt for which your administration is not responsible, it is a proper claim and provision should be made for its discharge. A definite claim will, no doubt, be presented to the legislature covering the item with provision that the refund may be extended over a period of years.

MOTOR VEHICLE FUEL TAX.

This source of revenue newly adopted in 1923 and effective since October first of that year, for the purpose of producing income for the upkeep and replacement of highways, has, because of the obvious equity of its distribution, proven less objectionable than any of the other forms of taxation. This source has had for the total of its tax extension for the four quarters it has been in operation, the sum of $13,887,823.40.

Not all of this has been collected, for the reason that certain items of deliveries on contracts are in dispute and suit now in court wherein the Richfield Oil Company is defendant and the state plaintiff, will result in a determination of all of the disputed points on these deliveries. This fuel tax will represent in income at the two-cent rate, with a favorable decision in the above suits, a yearly revenue of at least sixteen million dollars from present indications, and with registration and weight fees now being collected by the State Motor Vehicle Department, supplemented further by the motor transportation tax, will represent a total collection finally paid by the motor vehicle owner and operator of upward of twenty-one million dollars annually, thus showing an increased income from this source under the 1923 acts, of upward of twelve million dollars in excess of what it formerly contributed.

The motor vehicle fuel tax is being collected at or very slightly removed from the source of production, which only necessitates dealing with 65 to 70 distributors for any quarter. This limited number of collections to be dealt with makes the cost of collection and such checking of returns as has been found necessary, a gratifying small one as

compared to the amounts collected, as well as to costs for other sources of revenue.

The actual cost of applying the law to determine the amount of tax and extend it upon the roll, has been less than one-tenth of one per cent of the amount involved.

This does not include the Controller's cost of handling refunds which have amounted to date, to approximately eleven thousand dollars and which, because of the large amount of clerical work in connection with auditing and proving claims therefor, may necessarily increase somewhat. The total of refunds to date made to persons who purchased these commodities for other than highway purposes during the four quarters the law has been in operation, has been $667,365.10.

MOTOR TRANSPORTATION LICENSE TAX.

The motor transportation license tax has not been so fully organized for a sufficient period as to prove just what income it will produce or just what its cost of collection will be. Experience to date, however, has proven as was expected, that it will be much more expensive of enforcement relatively than is true of the motor vehicle fuel tax, yet not necessarily more so than some of the other revenue sources.

Much difficulty has been encountered in the administration of this tax through the failure of operators to understand that they were subject to its provisions. This has been exaggerated too by reason of the misunderstanding of the officers of some of the associations of these operators who were depended upon by their members to advise them and who gave out the advice that the law applied only to franchise carriers, thus causing the operator, innocent on his own account, to refuse or neglect to comply with requests to register and declare his activities. This made it necessary to hold a series of hearings throughout the southern part of the state to overcome this condition and caused some temporary opposition to the license tax which, however, has practically all passed and for the most part operators are now cooperating well with the department, with the result that the application of the act is now more rapidly nearing uniformity than in the beginning.

It seems only fair to say here that in this respect the important operators, who offered determined opposition to the adoption of the law, have from the beginning almost uniformly cooperated fully in its administration both individually and through their organizations.

Amendments made to this act in the closing hours of the session with limited time for their consideration by the legislature, resulted in some discrepancies and handicaps to administration creeping in, which will probably be remedied at the present session.

On the whole, while it seems safe to say that, like practically every revenue law, it will always show some minor impossibilities of uniform administration, it is a logical and equitable provision and is quite generally so accepted by those to whom it applies and who are required to pay the tax.

Just at the time of this writing we are advised that administration of this act has met another delay at least in the form of a decision of a superior court in the county of Fresno, declaring it unconstitutional on account of some of the exemptions inserted in the closing hours of its consideration.

The administration of the act is being interfered with considerably by this decision but is still being insisted upon by the department pending result of an appeal by the Attorney General.

MASSACHUSETTS TRUST DOCTRINE OR COMMON LAW TRUST.

The above form of organizations is becoming quite common in this state and since it comes directly into competition with, as well as frequently takes the place of, California business corporations which are required to pay a franchise tax in this state, it seems proper to put such organization on the same or a similar basis and require a business tax from them also. There is no provision in the present law which will seem to reach this class and while the amount of income to be derived from, providing that they be taxed in a manner or amount similar to other business taxes, will be small, the fact that they enjoy the same privileges and advantages as other business organizations which are required to pay a tax for such privileges, seems to indicate that equitable treatment requires a tax or license for them also.

In the following pages is set forth the usual statistical information on agriculture, live stock, city and county values and state revenue sources.

Respectfully submitted.

R. E. Collins, *Chairman,*
John C. Corbett,
Joseph M. Kelley,
H. G. Cattell,
Ray L. Riley, *Controller.*

M. D. Lack, *Secretary.*
November 1, 1924.

DETAILED STATEMENT OF EXPENDITURES.

Manner in Which the Appropriation for Postage, Expressage, Telegraphing and Contingent Expenses of the State Board of Equalization Was Expended for the Seventy-fourth Fiscal Year, Ending June 30, 1923.

	Seventy-fourth fiscal year
Post office box rent	$12 00
Purchasing Department	88 02
Telephone and telegraph	416 40
Business directories	10 00
Expressage	8 67
Towel service	12 00
Postage	25 00
Decisions	56 00
Membership National Tax Association	10 00
Delinquent postage	5 00
Miscellaneous	1 35
Total expenditures	$644 44
Balance remaining in appropriation	89
	$645 33

Manner in Which the Appropriation for Clerical Assistance of the State Board of Equalization Was Expended for the Seventy-fourth Fiscal Year, Ending June 30, 1923.

	Seventy-fourth fiscal year
Salaries	$9,608 59
Attorneys' fee (Raymond Benjamin)	4,000 00
Postage	1,678 00
Directories	15 00
Railroad manuals	60 00
Extra porter	27 10
New equipment	181 66
Miscellaneous	2 05
Total expenditures	$15,572 40
Appropriation	15,000 00
(O. D.)	$572 40

Manner in Which the Appropriation for Traveling Expenses of the State Board of Equalization Was Expended for the Seventy-fourth Fiscal Year Ending June 30, 1923.

	Seventy-fourth fiscal year
Traveling expenses	$3,951 13
Automobile	1,260 50
Total expenditures	$5,211 63
Balance remaining in appropriation	788 37
	$6,000 00

Manner in Which the Appropriation for Printing of the State Board of Equalization Was Expended for the Seventy-fourth Fiscal Year, Ending June 30, 1923.

	Seventy-fourth fiscal year
Printing (State Printing Department)	$2,546 75
Appropriation	2,500 00
(O. D.)	$46 75

Manner in Which the Appropriations for Special Investigation of the State Board of Equalization Was Expended for the Seventy-fourth Fiscal Year, Ending June 30, 1923.

	Seventy-fourth fiscal year
Special investigations (appraisers and experts)	$9,361 59
Clerical and office	261 00
Traveling	1,747 00
Expended	$11,369 59
Balance remaining in appropriation	2,495 52
	$13,865 11

DETAILED STATEMENT OF EXPENDITURES.

Manner in Which the Appropriation for Support of the State Board of Equalization Was Expended for the Seventy-fifth Fiscal Year, Ending June 30, 1924.

	Seventy-fifth fiscal year
Post office box rent	$12 00
State Purchasing Department	65 78
Telephone and telegraph	313 01
Business directories	45 50
Expressage	11 74
Towel service	12 00
Postage	690 00
Decisions	39 00
Membership National Tax Association	5 00
Deering's Codes	13 20
Railroad manuals	60 00
Printing	2,532 52
Miscellaneous	2 50
Total expenditures	$3,802 25
Balance remaining in appropriation	1,497 75
	$5,300 00

Manner in Which the Appropriation for Salaries of the State Board of Equalization Was Expended for the Seventy-fifth Fiscal Year, Ending June 30, 1924.

	Seventy-fifth fiscal year
Members, State Board of Equalization	$16,000 00
Secretary	4,000 00
Porter	480 00
Extra porter	41 10
Clerical and office	8,275 05
Total expenditures	$28,796 15
Balance remaining in appropriation	28,700 00
(O. D.)	$96 15

Manner in Which the Appropriation for Traveling Expenses of the State Board of Equalization Was Expended for the Seventy-fifth Fiscal Year, Ending June 30, 1924.

	Seventy-fifth fiscal year
Traveling expenses	$5,191 38
Balance remaining in appropriation	808 62
	$6,000 00

Manner in Which the Appropriation for Special Investigations of the State Board of Equalization Was Expended for the Seventy-fifth Fiscal Year, Ending June 30, 1924.

	Seventy-fifth fiscal year
Appraisers and experts	$8,420 78
Clerical and office	622 40
Total expenditures	$9,043 18
Balance remaining in appropriation	15,956 82
	$25,000 00

Manner in Which the Appropriation for New Equipment of the State Board of Equalization Was Expended for the Seventy-fifth Fiscal Year, Ending June 30, 1924.

	Seventy-fifth fiscal year
Y. & E. filing cases	$71 50
Balance remaining in appropriation	128 50
	$200 00

SCHEDULE A.

ASSESSMENT OF ROADWAY, ROADBED, RAILS AND ROLLING STOCK OF INTERCOUNTY RAILROADS BY THE STATE BOARD OF EQUALIZATION.

Name of company	1923			1924		
	Miles	Amount per mile	Total	Miles	Amount per mile	Total
Central Pacific Railway Company	1,212.772	$38,750	$46,994,915 00	1,212.030	$40,000	$48,481,200 00
South Pacific Coast Railway Company	84.078	50,000	4,203,900 00	83.902	55,000	4,614,610 00
Northwestern Pacific Railroad Company	490.260	30,000	14,707,800 00	490.280	31,000	15,198,680 00
Southern Pacific Railroad Company	2,626.269	50,000	131,313,450 00	2,621.771	55,000	144,197,405 00
Atchison, Topeka and Santa Fe Railway	1,444.980	33,330	48,161,184 00	1,415.460	38,000	53,787,480 00
Western Pacific Railroad Company	440.296	19,700	8,673,831 00	440.296	22,000	9,686,512 00
Sacramento Northern Railroad Company	149.900	11,870	1,779,313 00	149.690	11,870	1,776,818 00
Los Angeles and Salt Lake Railroad Company	266.500	43,700	11,646,050 00	262.600	37,500	9,847,500 00
San Francisco and Sacramento Railroad	97.800	15,950	1,559,910 00	97.800	16,500	1,613,700 00
Pacific Electric Railway Company	578.478	32,300	18,684,839 00	573.667	33,000	19,501,678 00
Pajaro Valley Consolidated Railroad	40.033	4,920	196,962 00	40.033	4,920	196,962 00
Tonopah and Tidewater Railroad Company	138.120	4,090	564,911 00	138.120	4,500	621,540 00
Sierra Railway Company of California	75.950	17,600	1,336,720 00	75.950	15,000	1,139,250 00
Yosemite Valley Railroad Company	78.429	15,035	1,179,180 00	78.429	15,035	1,179,180 00
Lake Tahoe Railway and Transportation Company	16.470	3,260	53,692 00	16.470	3,260	53,692 00
Tidewater Southern Railway Company	61.420	4,320	265,334 00	61.420	4,600	282,532 00
San Francisco, Napa and Calistoga Railway	42.394	13,000	551,122 00	42.685	13,000	554,905 00
Trona Railway Company	30.397	3,050	92,710 00	30.397	4,000	121,588 00
California Central Railroad Company	7.947	11,082	88,069 00	7.940	12,500	199,250 00
Central California Traction Company	57.470	14,800	850,556 00	57.470	15,500	890,785 00
Nevada County Narrow Gauge Railroad	20.654	11,230	231,944 00	20.654	10,000	206,540 00
Nevada-California-Oregon Railway Company	157.350	3,000	472,050 00	141.440	2,500	353,600 00
Pacific Coast Railway Company	99.580	3,670	365,459 00	99.580	3,000	298,740 00
Total railroads	8,217.547	----------	$293,973,901 00	8,158.084	----------	$314,807,147 00
The Pullman Company	4,845.559	$1,000	4,845.559 00	4,842.665	$1,200	5,811,196 00
Grand totals	13,063.106	----------	$298,819,460 00	13,000.749	----------	$320,618,343 00

SCHEDULE B.

Showing Value of All Property (Nonoperative and Operative) as Returned by County Auditors, and After Equalization by the State Board, for 1923.

Counties	Acres assessed	Value of real estate inside municipalities	Value of real estate outside municipalities	Value of real estate nonoperative	Value of improvements inside municipalities
Alameda	449,808	$138,824,750	$18,263,040	$157,087,790	$86,963,375
Alpine	48,289	----------	563,672	563,672	----------
Amador	303,370	552,903	3,151,999	3,704,902	853,094
Butte	901,638	3,473,030	20,463,774	23,936,804	3,448,485
Calaveras	540,887	90,305	4,980,850	5,071,155	207,280
Colusa	630,575	616,560	15,117,895	15,734,455	961,575
Contra Costa	459,670	11,819,265	19,681,700	31,500,965	12,371,370
Del Norte	228,020	261,060	9,123,770	9,384,830	201,230
El Dorado	695,988	273,280	6,861,580	7,134,860	627,350
Fresno	2,178,000	23,781,400	74,770,755	98,552,155	18,870,425
Glenn	636,370	821,021	16,645,155	17,466,176	1,031,375
Humboldt	1,697,954	4,288,085	22,250,020	26,538,105	3,110,225
Imperial	1,206,966	4,526,789	24,088,623	28,615,412	4,403,915
Inyo	270,368	339,065	6,615,749	6,954,814	530,770
Kern	3,613,945	7,705,010	101,454,920	109,159,930	6,021,885
Kings	843,436	1,460,065	15,382,710	16,842,775	1,614,680
Lake	365,955	276,195	4,396,005	4,672,200	217,490
Lassen	975,972	290,636	7,219,744	7,510,380	465,439
Los Angeles	1,213,743	724,911,730	156,111,265	881,022,995	394,379,125
Madera	846,347	1,409,115	12,756,385	14,165,500	1,182,040
Marin	308,619	6,285,345	8,542,870	14,828,215	5,067,495
Mariposa	402,058	----------	3,187,941	3,187,941	----------
Mendocino	1,958,648	1,570,351	17,199,242	18,769,593	1,613,140
Merced	1,187,000	1,091,194	19,487,066	20,578,260	1,932,335
Modoc	765,138	115,935	4,941,800	5,057,735	284,630
Mono	181,512	----------	1,666,345	1,666,345	----------
Monterey	1,511,311	4,368,379	21,866,310	26,234,689	3,770,011
Napa	411,680	2,544,120	9,503,480	12,047,600	3,249,710
Nevada	475,082	507,700	2,879,470	3,387,170	1,207,230
Orange	431,377	23,302,935	42,082,300	65,385,235	15,016,205
Placer	628,935	1,060,060	8,080,070	9,140,130	2,297,195
Plumas	550,411	----------	8,396,099	8,396,099	----------
Riverside	1,786,411	7,110,070	16,641,380	23,751,450	8,598,940
Sacramento	605,308	35,022,220	33,534,405	68,556,625	25,583,110
San Benito	651,154	658,930	7,570,465	8,229,395	830,710
San Bernardino	2,475,019	11,551,895	21,495,875	33,047,770	10,276,345
San Diego	1,197,592	44,825,025	10,142,335	54,967,360	13,955,920
San Francisco	29,750	303,187,370	----------	303,187,370	230,374,561
San Joaquin	870,251	18,437,515	43,689,595	62,127,110	17,337,650
San Luis Obispo	1,684,594	1,686,090	18,359,655	20,045,745	2,361,665
San Mateo	305,725	9,067,005	13,913,355	22,980,360	6,852,805
Santa Barbara	1,038,484	7,369,480	20,622,660	27,992,140	9,374,870
Santa Clara	753,257	19,153,320	34,634,810	53,788,130	18,488,185
Santa Cruz	259,634	5,136,525	7,118,605	12,255,130	4,061,500
Shasta	1,586,778	557,700	9,473,265	10,030,965	1,004,695
Sierra	331,331	127,115	1,731,700	1,858,815	97,925
Siskiyou	1,941,322	508,620	13,104,975	13,613,595	1,332,580
Solano	529,772	2,542,225	14,948,062	17,490,287	5,427,055
Sonoma	924,768	4,230,560	21,070,725	25,301,285	6,007,505
Stanislaus	870,505	4,335,385	28,225,410	32,560,795	5,623,230
Sutter	375,513	226,845	12,798,725	13,025,570	362,425
Tehama	1,378,984	678,890	10,108,470	10,787,360	1,323,120
Trinity	624,085	----------	2,612,130	2,612,130	----------
Tulare	1,457,242	3,880,620	37,641,785	41,522,405	6,504,820
Tuolumne	463,500	272,620	4,766,100	5,038,720	626,510
Ventura	639,168	3,729,980	32,173,140	35,903,120	3,154,250
Yolo	602,247	966,360	17,069,955	18,036,315	2,088,825
Yuba	376,218	2,359,105	6,820,920	9,180,025	2,900,030
Totals	50,622,261	$1,454,187,753	$1,128,001,106	$2,582,188,859	$956,448,250

SCHEDULE B—Continued.

Showing Value of All Property (Nonoperative and Operative) as Returned by County Auditors, and After Equalization by the State Board, for 1923.

Counties	Value of improvements outside municipalities	Value of all improvements nonoperative	Value of real estate and improvements	Value of personal property inside municipalities	Value of personal property outside municipalities
Alameda	$4,978,625	$91,942,000	$249,029,790	$45,517,138	$3,794,853
Alpine	91,920	91,920	655,392		55,921
Amador	1,067,334	1,920,428	5,625,330	254,931	639,678
Butte	3,269,055	6,717,540	30,654,344	1,840,433	3,139,520
Calaveras	1,252,110	1,459,390	6,530,545	73,480	784,480
Colusa	1,846,400	2,807,915	18,542,370	715,841	2,527,658
Contra Costa	17,651,425	30,022,795	61,523,760	7,443,040	11,470,815
Del Norte	296,690	497,920	9,882,759	287,173	478,068
El Dorado	1,001,480	1,628,830	8,763,690	250,690	1,206,890
Fresno	25,122,900	43,993,325	142,545,480	13,219,762	14,671,553
Glenn	1,635,758	2,667,133	20,133,309	766,842	2,258,618
Humboldt	1,855,430	4,965,655	31,503,760	2,243,394	4,614,073
Imperial	1,955,639	6,359,554	34,974,966	2,932,902	3,568,234
Inyo	1,800,285	2,331,055	9,285,869	867,065	1,312,769
Kern	11,074,635	17,096,520	126,256,450	3,705,560	21,351,860
Kings	2,470,405	4,085,085	20,927,860	1,161,995	2,506,075
Lake	1,196,330	1,413,820	6,086,020	111,650	533,335
Lassen	870,687	1,336,126	8,846,506	209,808	3,650,742
Los Angeles	48,218,935	442,598,060	1,323,621,055	248,358,055	82,072,940
Madera	1,581,880	2,763,920	16,929,420	591,355	1,485,290
Marin	1,793,665	6,861,160	21,689,375	972,170	1,384,155
Mariposa	588,111	588,111	3,776,052		807,410
Mendocino	1,597,915	3,211,055	21,980,648	1,569,607	3,071,964
Merced	3,137,419	5,069,754	25,648,014	1,084,386	4,595,642
Modoc	863,805	1,148,435	6,206,170	120,710	1,421,295
Mono	207,775	207,775	1,874,120		494,530
Monterey	2,821,925	6,591,936	32,826,625	1,780,375	3,792,315
Napa	2,923,185	6,172,895	18,220,495	1,526,262	2,087,020
Nevada	1,177,420	2,384,630	5,771,820	424,825	783,450
Orange	14,738,225	32,754,430	98,139,665	30,284,615	15,867,415
Placer	2,461,155	4,758,350	13,898,480	492,705	575,950
Plumas	1,076,060	1,076,060	9,472,159		2,816,900
Riverside	3,606,200	12,205,140	35,956,590	2,885,530	1,782,730
Sacramento	8,422,470	34,005,580	102,562,205	12,172,905	4,319,990
San Benito	1,713,165	2,543,875	10,773,270	504,215	1,934,010
San Bernardino	8,621,640	18,897,985	51,945,755	3,943,820	3,082,310
San Diego	2,025,030	15,980,950	70,948,310	11,289,697	1,792,004
San Francisco		230,374,561	533,561,931	94,974,548	
San Joaquin	8,874,720	26,212,370	88,339,480	8,343,470	5,751,350
San Luis Obispo	2,884,055	5,245,720	25,291,465	1,294,945	6,101,010
San Mateo	5,111,405	11,964,210	34,944,570	1,770,875	1,004,935
Santa Barbara	4,616,205	13,991,075	41,983,215	4,965,455	7,312,810
Santa Clara	15,795,490	34,283,675	88,071,805	7,620,950	5,429,325
Santa Cruz	3,048,625	7,110,125	19,365,255	1,687,325	1,002,520
Shasta	1,834,730	2,839,425	12,870,390	867,800	1,721,595
Sierra	376,680	474,605	2,333,420	80,300	223,065
Siskiyou	2,205,750	3,538,330	17,151,925	744,585	2,935,445
Solano	3,031,000	8,458,055	25,948,342	1,873,335	2,442,249
Sonoma	6,382,395	12,389,900	37,691,185	2,273,080	3,043,735
Stanislaus	5,753,345	11,376,375	43,937,370	3,322,070	4,552,570
Sutter	2,011,260	2,373,685	15,399,255	414,305	2,104,110
Tehama	1,314,785	2,837,905	13,625,265	790,335	2,353,495
Trinity	299,945	249,945	2,912,075		522,530
Tulare	11,115,465	17,620,285	59,142,690	3,354,465	6,032,330
Tuolumne	1,516,616	2,143,126	7,181,846	243,140	1,049,900
Ventura	6,400,550	9,554,800	45,457,920	2,035,667	2,952,142
Yolo	2,358,880	4,447,705	22,484,020	967,945	2,958,285
Yuba	1,143,810	4,043,840	13,223,865	1,301,725	2,182,505
Totals	$276,288,799	$1,232,737,049	$3,814,925,908	$538,029,256	$275,321,368

SCHEDULE B—Continued.

Showing Value of All Property (Nonoperative and Operative) as Returned by County Auditors, and After Equalization by the State Board, for 1923.

Counties	Total value personal property	Money and solvent credits inside municipalities	Money and solvent credits outside municipalities	Total value of moneys and solvent credits	Total assessment of nonoperative property
Alameda	$49,311,991	$2,230,382	$69,837	$2,300,219	$300,642,000
Alpine	55,921				711,513
Amador	894,609				6,519,939
Butte	4,979,953	10,264	13,745	24,009	35,658,306
Calaveras	857,960		250	250	7,388,755
Colusa	3,243,499	18,300	3,500	21,800	21,807,669
Contra Costa	18,913,855	61,695	14,595	76,290	80,513,995
Del Norte	765,241				10,647,991
El Dorado	1,457,580	2,320		2,320	10,223,590
Fresno	27,891,315	645,296	59,690	704,986	171,141,781
Glenn	3,025,460	8,170	14,170	22,340	23,181,109
Humboldt	6,857,467	62,636	133,596	196,232	38,557,459
Imperial	6,501,136				41,476,102
Inyo	1,679,834	16,010	4,420	20,430	10,986,133
Kern	25,057,420	52,475	18,030	70,505	151,384,375
Kings	3,668,070	320		320	24,596,250
Lake	644,985	4,300	3,585	7,885	6,738,890
Lassen	3,860,550				12,707,056
Los Angeles	331,330,995	38,509,205	1,789,910	40,299,115	1,695,251,165
Madera	2,076,645				19,006,065
Marin	2,356,325	15,645	90,595	106,240	24,151,940
Mariposa	807,410		4,841	4,841	4,588,303
Mendocino	4,644,571	8,636	1,130	9,766	26,634,985
Merced	5,680,028	13,940	23,055	36,995	31,365,037
Modoc	1,542,005	2,375	33,850	36,225	7,784,400
Mono	494,530		4,650	4,650	2,373,300
Monterey	5,572,690				38,399,315
Napa	3,613,282	5,610	1,300	6,910	21,840,687
Nevada	1,208,275	8,755	170	8,925	6,989,020
Orange	46,152,030	4,000	2,750	6,750	144,298,445
Placer	1,068,655	10,500	1,500	12,000	14,979,135
Plumas	2,816,990		7,930	7,930	12,296,989
Riverside	4,668,260				40,624,850
Sacramento	16,492,895	1,055,055	61,500	1,116,555	120,171,655
San Benito	2,438,225				13,211,495
San Bernardino	7,026,130		31,400	31,400	59,003,285
San Diego	13,081,701	327,443	7,405	334,848	84,364,859
San Francisco	94,974,548	15,644,121		15,644,121	644,180,600
San Joaquin	14,094,820	432,485	100,425	532,910	102,967,210
San Luis Obispo	7,395,955				32,687,420
San Mateo	2,775,810	194,800	126,000	320,800	38,041,180
Santa Barbara	12,278,265		5,750	5,750	54,267,230
Santa Clara	13,050,275	499,275	241,455	740,730	101,862,810
Santa Cruz	2,689,845	58,630	6,550	65,180	22,120,280
Shasta	2,599,395	700	3,800	4,500	15,474,285
Sierra	303,365		1,300	1,300	2,638,085
Siskiyou	3,680,030	200		200	20,832,155
Solano	4,315,584	2,719		2,719	30,266,645
Sonoma	5,316,815	94,830	2,860	97,690	43,105,690
Stanislaus	7,874,640	113,295	32,870	146,165	51,958,175
Sutter	2,518,415		31,400	31,400	17,949,070
Tehama	3,143,830	28,080	49,435	77,515	16,846,610
Trinity	522,530		4,165	4,165	3,438,770
Tulare	9,386,795	500	150	650	68,530,135
Tuolumne	1,293,040				8,474,886
Ventura	4,987,809	8,400		8,400	50,454,129
Yolo	3,926,230	2,100	3,900	6,000	26,416,250
Yuba	3,484,230	310	20,200	20,510	16,728,605
Totals	$813,350,624	$60,153,777	$3,027,664	$63,181,441	$4,691,457,973

SCHEDULE B—Concluded.

Showing Value of All Property (Nonoperative and Operative) as Returned by County Auditors, and After Equalization by the State Board, for 1923.

Counties	Value of operative property assessed locally	Total value of property returned by auditors	Railroad assessment made by State Board of Equalization	Grand total value of all property
Alameda	$32,902,900	$333,544,900	$8,656,405	$342,201,305
Alpine	96,036	807,549	.....	807,549
Amador	642,127	7,162,066	401,950	7,564,016
Butte	2,698,415	38,356,721	5,348,318	43,705,039
Calaveras	481,985	7,870,740	765,990	8,636,730
Colusa	641,805	22,449,474	3,752,747	26,202,221
Contra Costa	3,254,970	83,768,875	7,232,010	91,000,885
Del Norte	35,300	10,683,291	.....	10,683,291
El Dorado	369,420	10,593,010	1,510,200	12,103,210
Fresno	13,081,400	184,223,181	14,450,603	198,673,784
Glenn	591,621	23,772,730	3,993,526	27,766,256
Humboldt	1,118,265	39,675,724	3,818,370	43,494,094
Imperial	3,280,820	44,756,922	5,260,876	50,017,798
Inyo	1,357,946	12,344,079	5,765,671	18,109,750
Kern	14,497,750	165,882,125	15,114,053	180,996,178
Kings	851,290	25,447,540	3,753,341	29,200,881
Lake	43,635	6,782,525	.....	6,782,525
Lassen	196,141	12,903,197	3,906,949	16,810,146
Los Angeles	263,340,185	1,958,591,350	33,490,934	19,920,082,284
Madera	886,416	19,892,481	3,118,943	23,011,424
Marin	851,185	25,003,125	2,716,800	27,719,925
Mariposa	50,431	4,638,734	810,462	5,449,196
Mendocino	945,572	27,580,557	3,860,680	31,441,237
Merced	626,380	31,991,417	5,984,634	37,976,051
Modoc	246,715	8,031,115	204,690	8,235,805
Mono	919,460	3,292,760	1,296,381	4,589,141
Monterey	984,660	39,383,975	6,787,970	46,171,945
Napa	481,766	22,322,453	3,274,302	25,596,755
Nevada	1,244,580	8,233,600	1,393,197	9,626,797
Orange	8,093,465	152,391,910	8,363,121	160,755,031
Placer	1,950,011	16,929,146	4,586,076	21,515,222
Plumas	4,891,755	17,188,744	2,387,876	19,576,620
Riverside	3,345,350	43,970,200	11,589,599	55,559,799
Sacramento	16,076,265	136,247,920	6,564,721	142,812,641
San Benito	522,705	13,734,200	977,608	14,711,808
San Bernardino	10,056,035	69,059,320	29,708,978	98,768,298
San Diego	7,172,752	91,537,611	3,620,815	95,148,426
San Francisco	272,007,036	916,187,636	598,381	916,786,017
San Joaquin	7,849,746	110,816,956	8,929,574	119,746,530
San Luis Obispo	1,004,210	33,691,630	3,816,894	37,508,524
San Mateo	1,750,140	39,791,320	1,828,701	41,620,021
Santa Barbara	2,688,080	56,955,310	6,288,347	63,243,657
Santa Clara	11,486,505	113,349,315	5,003,689	118,353,004
Santa Cruz	1,294,365	23,414,645	2,326,252	25,740,897
Shasta	3,649,190	19,123,475	3,185,684	22,309,159
Sierra	78,850	2,716,935	258,766	2,975,701
Siskiyou	2,071,810	22,903,965	5,987,814	28,891,779
Solano	2,057,650	32,324,295	4,257,212	36,581,507
Sonoma	2,035,715	45,141,405	5,835,950	50,977,355
Stanislaus	2,372,340	54,330,515	5,189,827	59,520,342
Sutter	427,963	18,377,033	3,514,101	21,891,134
Tehama	1,002,280	17,848,890	2,494,064	20,342,954
Trinity	72,835	3,511,605	382,230	3,893,835
Tulare	8,161,310	76,691,445	11,168,695	87,860,140
Tuolumne	2,643,998	11,118,884	828,080	11,946,964
Ventura	1,756,330	52,210,459	5,474,135	57,684,594
Yolo	1,042,335	27,458,585	5,022,095	32,480,680
Yuba	962,270	17,690,875	1,970,173	19,661,048
Totals	$725,242,472	$5,415,700,445	$298,819,460	$5,715,519,905

SCHEDULE C.

Showing Value of All Property (Nonoperative and Operative) as Returned by County Auditors, and After Equalization by the State Board, for 1924.

Counties	Acres assessed	Value of real estate inside municipalities	Value of real estate outside municipalities	Value of real estate nonoperative	Value of improvements inside municipalities
Alameda	448,903	$146,626,700	$18,393,975	$165,020,675	$100,127,005
Alpine	48,955	----------	568,393	568,393	----------
Amador	307,235	505,509	3,369,257	3,874,766	874,680
Butte	910,370	3,490,560	20,811,793	24,302,353	3,659,940
Calaveras	530,331	90,560	4,762,265	4,852,825	207,900
Colusa	630,575	621,810	15,166,265	15,788,075	963,275
Contra Costa	458,307	11,682,370	19,766,205	31,448,575	12,846,715
Del Norte	216,969	258,105	8,961,673	9,219,778	220,465
El Dorado	672,960	280,490	6,935,980	7,216,470	662,890
Fresno	2,178,000	23,978,765	75,052,585	99,031,350	20,356,865
Glenn	636,370	861,946	16,706,106	17,568,052	1,041,965
Humboldt	1,710,937	5,108,680	31,663,455	36,772,135	4,577,345
Imperial	1,172,027	4,496,205	23,811,434	28,307,639	4,471,225
Inyo	270,962	234,360	6,676,890	7,011,250	546,970
Kern	3,709,694	7,922,840	98,397,895	106,320,735	6,517,065
Kings	846,315	1,320,465	16,066,190	17,386,655	1,705,080
Lake	362,441	281,610	4,578,880	4,860,490	224,235
Lassen	982,182	283,387	7,212,616	7,496,003	473,864
Los Angeles	1,242,197	1,105,775,590	211,208,870	1,316,784,460	506,362,065
Madera	852,489	1,410,963	15,369,170	16,780,133	1,302,372
Marin	307,086	6,395,460	8,554,765	14,950,225	5,581,970
Mariposa	411,878	----------	3,151,181	3,151,181	----------
Mendocino	1,767,012	1,508,975	16,586,550	18,095,525	1,742,640
Merced	1,192,000	1,321,590	19,545,240	20,866,830	2,360,835
Modoc	769,204	115,910	4,958,590	5,074,500	288,595
Mono	164,031	----------	1,734,470	1,734,470	----------
Monterey	1,518,211	4,387,705	21,895,444	26,283,149	4,036,610
Napa	412,187	2,550,635	9,456,105	12,006,740	3,410,485
Nevada	476,555	503,300	2,878,555	3,381,855	1,215,010
Orange	420,378	25,781,200	41,676,035	67,457,235	16,485,180
Placer	612,494	1,092,235	8,029,250	9,121,485	2,393,520
Plumas	552,238	----------	8,429,910	8,429,910	----------
Riverside	1,788,944	7,733,260	17,263,870	24,997,130	10,865,760
Sacramento	593,453	36,678,190	33,126,767	69,804,957	28,728,780
San Benito	665,280	660,710	7,604,430	8,265,140	905,150
San Bernardino	2,503,882	14,279,570	23,200,155	37,479,725	11,767,610
San Diego	1,201,785	45,781,010	10,376,515	56,157,525	15,936,655
San Francisco	29,760	309,902,590	----------	309,902,590	252,725,618
San Joaquin	902,819	18,389,930	43,283,381	61,673,311	18,456,075
San Luis Obispo	1,696,379	1,716,630	18,335,000	20,051,630	2,639,640
San Mateo	305,000	10,042,945	13,219,490	23,262,435	8,098,925
Santa Barbara	1,045,586	8,222,050	20,874,815	29,296,865	10,626,555
Santa Clara	754,234	19,509,750	34,473,400	53,983,150	20,391,490
Santa Cruz	259,676	5,152,990	7,122,480	12,275,470	4,227,855
Shasta	1,542,930	555,470	9,684,215	10,239,685	1,069,385
Sierra	336,698	128,750	1,795,775	1,924,525	99,250
Siskiyou	1,901,099	556,255	9,873,535	10,429,790	1,347,725
Solano	521,975	2,550,380	14,962,528	17,512,908	5,480,310
Sonoma	928,259	4,237,085	20,958,135	25,195,220	6,407,400
Stanislaus	870,500	4,399,810	28,201,280	32,601,090	5,925,790
Sutter	374,513	242,790	12,639,095	12,881,885	433,210
Tehama	1,384,382	685,915	10,124,060	10,809,975	1,357,035
Trinity	605,095	----------	2,562,540	2,562,540	----------
Tulare	1,490,906	3,906,540	37,371,150	41,277,690	6,982,650
Tuolumne	463,500	272,285	5,004,037	5,276,322	657,055
Ventura	598,753	3,761,225	32,226,805	35,988,030	3,490,765
Yolo	597,988	954,975	17,135,144	18,090,119	2,173,670
Yuba	366,192	2,352,640	6,802,035	9,154,675	3,026,745
Totals	50,521,081	$1,861,661,670	$1,190,596,629	$3,052,258,299	$1,128,477,869

SCHEDULE C—Continued.

Showing Value of All Property (Nonoperative and Operative) as Returned by County Auditors, and After Equalization by the State Board, for 1924.

Counties	Value of improvements outside municipalities	Value of all improvements nonoperative	Value of real estate and improvements	Value of personal property inside municipalities	Value of personal property outside municipalities
Alameda	$5,463,450	$105,590,455	$270,611,130	$52,931,318	$3,868,371
Alpine	90,480	90,480	658,873	----------	61,969
Amador	1,065,893	1,940,573	5,818,339	299,610	615,780
Butte	3,438,040	7,097,980	31,400,333	2,095,760	3,174,275
Calaveras	1,310,400	1,518,300	6,371,125	102,520	919,240
Colusa	1,973,235	2,936,510	18,724,585	602,019	2,402,967
Contra Costa	16,170,180	29,016,895	60,465,470	7,682,670	17,806,170
Del Norte	251,445	471,910	9,691,688	254,610	472,372
El Dorado	1,090,230	1,753,120	8,969,590	268,810	988,975
Fresno	26,655,735	47,012,600	146,043,950	11,398,799	13,822,862
Glenn	1,695,605	2,737,570	20,305,622	634,215	2,055,657
Humboldt	2,439,980	7,017,325	43,789,460	2,741,274	5,232,193
Imperial	1,974,421	6,445,646	34,753,285	3,213,451	3,984,608
Inyo	2,087,085	2,634,055	9,645,305	365,141	1,368,649
Kern	11,778,075	18,295,140	124,615,875	3,814,410	28,748,715
Kings	2,669,015	4,374,095	21,760,750	1,262,185	2,750,939
Lake	1,254,545	1,478,780	6,339,270	103,805	547,670
Lassen	1,432,050	1,905,914	9,401,917	211,732	3,505,083
Los Angeles	58,539,940	564,902,005	1,881,686,465	315,666,945	125,942,690
Madera	1,804,975	3,107,347	19,887,480	512,480	1,683,740
Marin	1,996,080	7,578,050	22,528,275	1,238,105	1,538,380
Mariposa	579,047	579,047	3,730,228	----------	902,275
Mendocino	1,803,120	3,545,760	21,641,285	1,568,502	3,091,820
Merced	3,167,080	5,527,915	26,394,745	1,328,300	4,466,096
Modoc	859,630	1,148,225	6,222,725	125,960	1,385,725
Mono	238,505	238,505	1,972,975	----------	475,325
Monterey	2,975,045	7,011,655	33,294,804	2,226,235	3,987,520
Napa	2,973,980	6,384,465	18,391,205	1,583,450	1,992,540
Nevada	1,179,965	2,394,975	5,776,830	476,090	777,215
Orange	19,702,145	36,187,325	103,644,560	15,449,115	35,149,915
Placer	2,525,355	4,918,875	14,040,360	534,850	587,610
Plumas	922,130	922,130	9,352,040	----------	3,302,925
Riverside	4,346,790	15,212,550	40,209,680	2,808,030	1,633,850
Sacramento	8,189,850	36,917,630	106,722,587	12,292,045	4,135,495
San Benito	1,810,795	2,715,945	10,981,085	494,220	1,710,360
San Bernardino	9,390,760	21,158,370	58,638,095	4,400,465	3,151,975
San Diego	2,320,945	18,257,600	74,415,125	11,924,590	1,753,323
San Francisco	----------	252,725,618	562,628,208	104,400,393	----------
San Joaquin	9,134,225	27,590,300	89,263,611	8,066,050	4,422,578
San Luis Obispo	2,903,040	5,542,680	25,594,310	1,445,280	6,155,255
San Mateo	4,822,345	12,921,270	36,183,705	1,968,140	874,460
Santa Barbara	5,040,400	15,666,955	44,963,820	4,782,460	7,355,945
Santa Clara	16,813,910	37,205,400	91,188,550	7,502,970	5,321,037
Santa Cruz	3,113,955	7,341,810	19,617,280	1,719,765	941,215
Shasta	1,915,460	2,984,845	13,244,530	907,045	1,998,300
Sierra	402,530	501,780	2,426,305	89,975	403,165
Siskiyou	5,445,675	6,793,400	17,223,190	765,455	3,037,035
Solano	3,041,025	8,521,335	26,034,243	1,860,959	2,421,825
Sonoma	6,469,620	12,877,020	38,072,240	2,316,750	2,822,190
Stanislaus	6,359,080	12,284,870	44,885,960	3,541,770	4,760,060
Sutter	2,107,620	2,540,830	15,422,715	440,910	2,076,455
Tehama	1,624,760	2,981,795	13,791,770	864,815	2,380,705
Trinity	296,200	296,200	2,858,740	----------	510,750
Tulare	11,733,430	18,716,080	59,993,770	3,311,630	5,669,950
Tuolumne	1,348,405	2,205,460	7,481,782	256,223	1,186,280
Ventura	6,810,585	10,301,350	46,289,380	2,200,505	2,771,290
Yolo	2,476,705	4,650,375	22,740,494	919,665	3,267,031
Yuba	1,232,180	4,258,925	13,413,600	1,423,300	2,105,040
Totals	$301,457,151	$1,429,935,020	$4,482,193,319	$609,395,771	$350,475,840

SCHEDULE C—Continued.

Showing Value of All Property (Nonoperative and Operative) as Returned by County Auditors, and After Equalization by the State Board, for 1924.

Counties	Total value of personal property	Money and solvent credits inside municipalities	Money and solvent credits outside municipalities	Total value money and solvent credits	Total assessment of nonoperative property
Alameda	$56,799,689	$2,415,963	$86,185	$2,502,148	$329,912,967
Alpine	61,969	----------	----------	----------	720,842
Amador	915,390	----------	----------	----------	6,730,729
Butte	5,270,035	2,045	8,360	10,405	36,680,773
Calaveras	1,021,760	----------	135	135	7,393,020
Colusa	3,004,986	18,000	9,000	27,000	21,756,571
Contra Costa	25,488,840	26,425	51,825	78,250	86,032,560
Del Norte	726,982	----------	----------	----------	10,418,670
El Dorado	1,257,785	2,370	2,700	5,070	10,232,445
Fresno	25,221,661	435,246	82,905	518,151	171,783,762
Glenn	2,689,872	3,500	3,150	6,650	23,002,144
Humboldt	7,973,467	241,437	105,962	347,399	52,110,326
Imperial	7,198,059	----------	----------	----------	41,951,344
Inyo	1,733,790	14,000	10,000	24,000	11,403,095
Kern	32,563,125	27,615	23,730	51,345	157,230,345
Kings	4,013,124	1,260	----------	1,260	25,775,134
Lake	651,475	4,705	2,830	7,535	6,998,280
Lassen	3,716,815	----------	----------	----------	13,118,732
Los Angeles	441,609,635	49,805,820	2,048,635	51,854,455	2,375,150,555
Madera	2,196,220	----------	----------	----------	22,083,700
Marin	2,776,485	15,980	8,215	24,195	25,328,955
Mariposa	902,275	----------	3,575	3,575	4,636,098
Mendocino	4,660,322	13,160	----------	13,160	26,314,767
Merced	5,794,396	23,435	2,905	26,340	32,215,481
Modoc	1,511,685	1,000	34,995	35,995	7,770,405
Mono	475,325	----------	2,080	2,080	2,450,380
Monterey	6,213,755	----------	----------	----------	39,508,559
Napa	3,575,990	6,000	----------	6,000	21,973,195
Nevada	1,253,305	5,185	----------	5,185	7,035,320
Orange	50,599,030	500	800	1,300	154,244,890
Placer	1,122,460	10,500	1,500	12,000	15,174,820
Plumas	3,302,925	----------	5,625	5,625	12,660,590
Riverside	4,441,880	500	----------	500	44,652,060
Sacramento	16,427,540	804,425	53,215	857,640	124,007,767
San Benito	2,204,580	----------	----------	----------	13,185,665
San Bernardino	7,552,440	----------	24,220	24,220	66,214,755
San Diego	13,677,913	326,985	4,330	331,315	88,424,353
San Francisco	104,400,393	16,638,737	----------	16,638,737	683,667,338
San Joaquin	12,488,628	323,795	96,015	419,810	102,172,049
San Luis Obispo	7,600,535	----------	----------	----------	33,194,845
San Mateo	2,842,600	198,000	111,600	309,600	39,335,905
Santa Barbara	12,138,405	7,000	300	7,300	57,109,525
Santa Clara	12,824,007	398,120	175,670	573,790	104,586,347
Santa Cruz	2,660,980	8,255	----------	8,255	22,286,515
Shasta	2,905,345	1,000	1,450	2,450	16,132,325
Sierra	493,140	----------	2,050	2,050	2,921,495
Siskiyou	3,802,490	1,000	1,640	2,640	21,028,320
Solano	4,282,784	1,000	5,000	6,000	30,323,027
Sonoma	5,138,940	5,960	----------	5,960	43,217,140
Stanislaus	8,301,830	126,960	33,200	160,160	53,347,950
Sutter	2,517,365	500	2,600	3,100	17,943,180
Tehama	3,245,520	34,485	57,225	91,710	17,129,000
Trinity	510,750	----------	4,345	4,345	3,373,835
Tulare	8,981,580	1,200	----------	1,200	68,976,550
Tuolumne	1,442,503	----------	----------	----------	8,924,285
Ventura	4,971,795	7,000	----------	7,000	51,268,175
Yolo	4,186,696	----------	----------	----------	26,927,190
Yuba	3,528,340	500	8,525	9,025	16,950,96
Totals	$959,871,611	$71,959,568	$3,076,497	$75,036,065	$5,517,100,995

SCHEDULE C—Concluded.

Showing Value of All Property (Nonoperative and Operative) as Returned by County Auditors, and After Equalization by the State Board, for 1924.

Counties	Value of operative property assessed locally	Total value of property returned by auditors	Railroad assessments made by State Board of Equalization	Grand total value of all property
Alameda	$35,299,995	$365,212,962	$9,255,580	$374,468,542
Alpine	175,860	896,702	.....	896,702
Amador	634,826	7,365,555	442,145	7,807,700
Butte	2,845,040	39,525,813	5,652,943	45,178,756
Calaveras	648,375	8,041,395	800,515	8,841,908
Colusa	596,906	22,353,477	4,121,434	26,474,911
Contra Costa	3,063,730	89,096,290	8,003,492	97,099,782
Del Norte	56,160	10,474,770	.....	10,474,770
El Dorado	972,880	11,205,325	1,661,220	12,866,545
Fresno	16,646,380	188,430,142	15,958,409	204,388,551
Glenn	652,113	23,654,257	4,395,741	28,049,998
Humboldt	1,234,576	53,344,902	3,959,654	57,304,556
Imperial	4,071,267	46,022,611	5,802,801	51,825,412
Inyo	1,388,300	12,791,395	5,987,013	18,778,408
Kern	14,492,595	171,722,940	16,576,513	188,299,453
Kings	730,050	26,505,184	4,216,272	30,721,456
Lake	51,815	7,050,095	.....	7,050,095
Lassen	197,946	13,316,678	4,026,921	17,343,599
Los Angeles	312,228,740	2,687,379,293	35,545,930	2,722,925,255
Madera	1,922,603	24,006,303	3,395,442	27,401,745
Marin	936,235	26,265,190	2,811,860	29,077,050
Mariposa	57,323	4,693,421	810,462	5,503,883
Mendocino	1,673,524	27,988,291	4,006,216	31,994,507
Merced	685,000	32,900,181	6,518,281	39,418,762
Modoc	269,635	8,040,040	170,575	8,210,615
Mono	905,225	3,355,605	1,338,200	4,693,805
Monterey	1,062,812	40,571,371	7,455,527	48,026,898
Napa	536,335	22,529,530	3,556,955	26,086,485
Nevada	1,162,020	8,187,340	1,414,952	9,602,292
Orange	10,041,675	164,285,565	9,009,996	173,295,561
Placer	1,950,011	17,124,831	4,753,701	21,878,532
Plumas	4,979,715	17,640,305	2,674,634	20,314,939
Riverside	3,926,850	48,578,910	12,684,984	61,263,894
Sacramento	17,196,120	141,203,887	7,004,667	148,208,554
San Benito	608,345	13,794,010	1,077,826	14,871,836
San Bernardino	12,243,230	78,457,985	30,127,538	108,585,523
San Diego	12,711,180	101,135,533	4,124,396	105,259,929
San Francisco	304,890,995	988,558,333	658,737	989,217,070
San Joaquin	6,860,228	109,032,277	9,732,636	118,764,913
San Luis Obispo	991,333	34,186,178	4,162,726	38,348,904
San Mateo	1,946,230	41,282,135	1,996,682	43,278,817
Santa Barbara	2,983,845	60,093,370	6,865,553	66,958,923
Santa Clara	9,808,670	114,395,017	5,494,851	119,889,868
Santa Cruz	1,299,685	23,586,200	2,558,818	26,145,018
Shasta	3,592,515	19,724,840	3,302,798	23,027,638
Sierra	79,550	3,001,045	284,067	3,285,112
Siskiyou	1,879,395	22,907,715	6,206,203	29,113,918
Solano	1,857,866	32,180,893	4,649,264	36,830,157
Sonoma	1,868,055	45,085,195	6,148,225	51,233,420
Stanislaus	4,369,075	57,717,025	5,596,139	63,313,164
Sutter	426,327	18,369,507	3,793,914	22,163,421
Tehama	967,095	18,096,095	2,642,089	20,738,184
Trinity	74,065	3,447,900	397,348	3,845,248
Tulare	8,475,530	77,552,080	12,441,856	89,993,936
Tuolumne	2,855,245	11,779,530	705,750	12,485,280
Ventura	2,262,480	53,530,655	6,027,327	59,557,982
Yolo	1,086,875	28,014,065	5,386,161	33,400,226
Yuba	1,449,295	18,400,260	2,124,404	20,524,664
Totals	$829,514,512	$6,346,615,507	$320,518,343	$6,667,133,850

SCHEDULE D.

Exemptions for 1923-1924.

Counties	1923		1924	
	Veteran Exemptions		Veteran Exemptions	
	Number	Amount	Number	Amount
Alameda	8,031	$5,098,650	10,650	$6,208,940
Alpine	2	2,000	8	2,460
Amador	166	83,893	176	84,044
Butte	570	389,880	706	313,430
Calaveras	135	95,175	135	96,285
Colusa	265	158,985	284	146,765
Contra Costa	1,084	581,730	1,698	796,950
Del Norte	58	7,494	63	45,939
El Dorado	142	102,520	182	105,830
Fresno	3,373	2,093,615	3,601	2,229,790
Glenn	225	113,336	275	82,500
Humboldt	648	314,883	896	412,980
Imperial	632	409,264	743	421,463
Inyo	103	72,656	101	76,665
Kern	2,001	993,470	2,174	1,092,685
Kings	365	253,193	430	217,275
Lake	162	107,220	172	106,075
Lassen	164	82,000	214	107,000
Los Angeles	26,272	12,822,650	34,085	24,662,060
Madera	341	185,578	421	234,870
Marin	731	431,211	946	477,700
Mariposa	60	40,000	66	25,222
Mendocino	389	245,334	486	275,350
Merced	619	345,150	776	424,813
Modoc	91	62,515	113	70,500
Mono	5	4,400	5	4,400
Monterey	667	345,375	714	367,460
Napa	396	226,960	426	255,210
Nevada	192	91,390	239	104,820
Orange	1,753	891,120	2,311	1,228,320
Placer	300	215,000	400	300,000
Plumas	95	48,690	72	34,950
Riverside	1,081	707,670	1,135	771,920
Sacramento	1,852	1,342,700	2,000	1,548,000
San Benito	228	144,815	287	158,335
San Bernardino	1,791	1,024,780	2,230	1,206,545
San Diego	5,375	2,503,445	5,236	2,819,880
San Francisco	8,467	4,674,077	11,464	6,423,740
San Joaquin	1,258	717,340	1,586	879,335
San Luis Obispo	495	287,435	545	308,090
San Mateo	723	272,500	1,070	495,500
Santa Barbara	666	293,555	1,138	590,370
Santa Clara	1,097	1,000,464	1,037	890,665
Santa Cruz	579	386,165	799	436,775
Shasta	357	190,455	437	199,005
Sierra	27	15,025	33	15,800
Siskiyou	251	152,870	294	185,490
Solano	900	640,320	1,013	658,580
Sonoma	990	627,480	1,178	1,022,805
Stanislaus	1,140	692,235	1,291	774,060
Sutter	191	127,950	240	170,300
Tehama	198	169,640	219	160,925
Trinity	72	35,570	75	41,640
Tulare	1,067	772,400	950	878,890
Tuolumne	138	88,480	213	111,954
Ventura	760	239,730	844	394,700
Yolo	426	253,855	474	286,175
Yuba	264	133,770	289	167,480
Totals	80,430	$44,410,063	99,645	$62,590,710

SCHEDULE D—Concluded.

Exemptions for 1923-1924.

Counties	1923		1924	
	College Exemptions		College Exemptions	
	Number	Amount	Number	Amount
Alameda	8	$706,300	7	$450,400
Alpine				
Amador				
Butte				
Calaveras				
Colusa				
Contra Costa				
Del Norte				
El Dorado				
Fresno				
Glenn				
Humboldt				
Imperial				
Inyo				
Kern				
Kings				
Lake				
Lassen				
Los Angeles	9	1,708,570	9	2,012,170
Madera				
Marin	2	178,200	1	51,300
Mariposa				
Mendocino				
Merced				
Modoc				
Mono				
Monterey				
Napa	1	15,930	1	15,930
Nevada	1	47,000	1	47,000
Orange	1	1,150		
Placer				
Plumas				
Riverside				
Sacramento				
San Benito				
San Bernardino	1	118,775	1	128,275
San Diego	1	60,740	2	79,040
San Francisco	2	280,690	2	280,690
San Joaquin			1	7,365
San Luis Obispo				
San Mateo	3	128,600	3	130,900
Santa Barbara				
Santa Clara	4	829,475	3	851,225
Santa Cruz				
Shasta				
Sierra				
Siskiyou				
Solano				
Sonoma				
Stanislaus				
Sutter				
Tehama				
Trinity				
Tulare				
Tuolumne				
Ventura				
Yolo				
Yuba				
Totals	33	$4,075,430	31	$4,054,295

SCHEDULE E.

Assessment of Municipalities (Incorporated Cities and Towns) by County Assessors for the Years 1923 and 1924, Exclusive of Operative Property of Corporations Exempt from Local Taxation.

Counties and cities	Value real estate	Improvements thereon	Personal property	Money and solvent credits	Total
Alameda—					
Alameda, 1923	$10,003,375	$7,400,225	$2,770,400	$98,850	$20,274,850
1924	10,160,500	7,799,125	2,993,325	154,225	21,107,175
Albany, 1923	1,759,075	590,800	133,950	----------	2,483,825
1924	1,769,950	750,550	180,800	200	2,701,500
Berkeley, 1923	23,812,600	17,882,450	7,101,500	172,575	48,969,125
1924	23,902,700	19,576,000	7,584,825	157,200	51,220,725
Emeryville, 1923	1,773,150	1,277,975	2,467,350	150,150	5,668,625
1924	1,974,650	1,705,975	2,729,475	188,800	6,598,900
Hayward, 1923	1,275,625	918,825	516,225	15,725	2,726,400
1924	1,291,175	1,013,500	476,850	17,400	2,798,925
Livermore, 1923	303,325	428,400	362,700	15,500	1,109,925
1924	311,625	480,725	333,800	8,000	1,134,150
Oakland, 1923	93,717,900	53,633,600	27,847,425	1,417,325	176,616,250
1924	100,400,500	62,705,150	32,495,325	1,251,750	196,852,725
Piedmont, 1923	3,971,250	3,145,250	1,336,950	99,450	8,552,900
1924	4,075,575	3,804,650	1,558,225	109,875	9,548,325
Pleasanton, 1923	178,725	203,675	146,775	1,700	530,875
1924	198,450	206,325	159,575	1,150	565,500
San Leandro, 1923	1,939,275	1,578,525	971,550	40,450	4,529,800
1924	2,136,150	1,907,875	1,186,850	53,550	5,284,425
Amador—					
Amador, 1923	55,955	86,475	16,449	----------	158,879
1924	56,980	86,035	24,223	----------	167,238
Jackson, 1923	150,811	383,982	119,005	----------	653,798
1924	156,985	389,370	152,291	----------	698,646
Plymouth, 1923	216,554	187,785	46,033	----------	450,372
1924	166,429	180,300	62,180	----------	408,909
Sutter Creek, 1923	129,583	194,852	73,444	----------	397,879
1924	125,115	202,525	78,166	----------	405,806
Butte—					
Biggs, 1923	62,050	125,160	91,868	60	279,138
1924	65,115	130,815	88,965	----------	284,895
Chico, 1923	2,162,610	1,998,580	1,036,780	4,935	5,202,905
1924	2,177,245	2,140,380	1,123,605	1,000	5,442,230
Gridley, 1923	240,500	378,735	237,860	2,250	859,345
1924	239,145	376,825	229,085	----------	845,055
Oroville, 1923	960,760	946,010	521,000	3,019	2,430,789
1924	1,009,055	1,011,920	606,540	1,045	2,628,560
Calaveras—					
Angels, 1923	91,305	207,280	73,480	----------	372,065
1924	90,560	207,900	102,520	----------	400,980
Colusa—					
Colusa, 1923	421,095	741,640	426,865	5,500	1,665,100
1924	494,875	755,185	409,305	5,500	1,664,865
Williams, 1923	125,465	219,875	289,830	12,800	647,970
1924	126,935	208,090	196,614	12,500	544,139
Contra Costa—					
Antioch, 1923	264,550	462,210	393,950	----------	1,120,710
1924	267,935	484,045	422,345	----------	1,174,325
Concord, 1923	106,340	199,695	50,425	----------	356,460
1924	107,195	211,785	83,605	----------	402,585
El Cerrito, 1923	919,470	181,810	41,215	----------	1,142,495
1924	969,860	215,630	66,640	----------	1,252,130
Hercules, 1923	168,760	537,965	364,465	57,405	1,128,595
1924	135,505	491,305	350,575	47,555	1,024,940
Martinez, 1923	724,030	1,094,220	739,655	----------	2,557,905
1924	720,350	1,188,885	796,965	----------	2,706,200
Pinole, 1923	58,380	115,120	36,750	----------	210,250
1924	58,950	113,200	47,520	----------	219,690
Pittsburg, 1923	494,470	842,065	171,420	----------	1,507,555
1924	537,480	1,040,510	186,870	----------	1,764,860
Richmond, 1923	8,981,935	8,802,060	5,439,800	4,290	23,228,085
1924	8,756,150	8,924,475	5,447,480	4,270	23,132,375
Walnut Creek, 1923	107,945	138,120	49,960	----------	296,025
1924	130,815	153,680	52,780	----------	337,275
Del Norte—					
Crescent City, 1923	274,005	190,545	209,015	----------	673,565
1924	256,845	220,465	249,490	----------	726,800
El Dorado—					
Placerville, 1923	273,280	627,350	250,690	2,320	1,153,640
1924	280,490	662,890	254,850	2,220	1,200,450

SCHEDULE E—Continued.

Assessment of Municipalities (Incorporated Cities and Towns) by County Assessors for the Years 1923 and 1924, Exclusive of Operative Property of Corporations Exempt from Local Taxation.

Counties and cities	Value real estate	Improvements thereon	Personal property	Money and solvent credits	Total
Fresno—					
Clovis, 1923	$234,590	$157,935	$229,380	$1,140	$623,045
1924	239,700	171,315	200,527	370	611,912
Coalinga, 1923	377,520	425,405	535,297	8,370	1,346,592
1924	376,460	423,130	418,195	5,465	1,223,250
Firebaugh, 1923	49,015	38,265	23,995	.....	111,275
1924	62,410	42,365	33,230	.....	138,005
Fowler, 1923	181,095	209,185	392,805	9,435	792,580
1924	181,530	216,325	378,240	7,385	783,480
Fresno, 1923	21,100,035	15,841,860	8,976,980	512,736	46,431,611
1924	21,245,295	17,226,160	8,140,773	374,476	46,986,704
Kingsburg, 1923	309,825	390,110	622,485	1,890	1,333,510
1924	310,170	394,975	467,270	515	1,172,930
Parlier, 1923	122,770	123,890	460,250	40,585	747,495
1924	129,255	126,750	300,860	24,630	581,495
Reedley, 1923	470,385	504,225	748,925	64,875	1,788,410
1924	480,170	549,335	563,569	18,640	1,611,714
Sanger, 1923	400,010	428,835	494,365	2,400	1,325,610
1924	414,890	447,220	363,535	2,350	1,227,995
San Joaquin, 1923	65,145	27,175	26,100	300	118,720
1924	64,745	30,000	22,185	150	117,080
Selma, 1923	471,010	714,340	709,120	3,565	1,898,035
1924	474,040	749,245	592,340	1,450	1,817,075
Glenn—					
Orland, 1923	242,710	341,875	233,105	2,120	819,810
1924	262,395	346,440	219,690	2,500	831,025
Willows, 1923	578,071	689,350	527,420	4,000	1,798,841
1924	599,551	695,525	421,265	1,000	1,717,341
Humboldt—					
Arcata, 1923	225,155	280,695	190,900	2,500	699,250
1924	311,190	376,760	280,554	65,902	1,034,406
Blue Lake, 1923	27,910	48,705	24,895	.....	101,510
1924	35,330	47,730	28,895	.....	131,955
Eureka, 1923	3,760,345	2,461,650	1,705,774	32,876	7,960,645
1924	4,386,845	3,670,135	2,079,340	122,650	10,258,970
Ferndale, 1923	194,235	188,233	193,745	26,650	602,855
1924	264,435	257,870	205,830	50,815	778,950
Fortuna, 1923	66,660	116,810	92,520	620	276,610
1924	95,370	189,710	143,600	2,220	430,900
Trinidad, 1923	13,780	12,130	36,650	.....	62,560
1924	15,310	14,940	38,110	.....	68,360
Imperial—					
Brawley, 1923	998,375	773,880	583,101	.....	2,355,356
1924	996,015	791,045	608,399	.....	2,395,459
Calexico, 1923	1,226,500	1,100,740	745,950	.....	3,073,193
1924	1,239,640	1,140,245	743,847	.....	3,123,732
Calipatria, 1923	336,910	258,800	132,915	.....	728,625
1924	335,395	252,925	166,311	.....	754,631
El Centro, 1923	1,494,234	1,716,860	1,017,583	.....	4,228,677
1924	1,489,860	1,744,485	1,241,347	.....	4,475,692
Holtville, 1923	186,645	286,762	259,731	.....	733,138
1924	182,320	279,690	239,859	.....	701,869
Imperial, 1923	277,510	269,710	192,222	.....	739,442
1924	255,775	266,835	214,388	.....	736,998
Inyo—					
Bishop, 1923	345,055	530,770	391,730	16,010	1,283,565
1924	341,185	546,070	361,571	14,000	1,256,001
Kern—					
Bakersfield, 1923	6,627,350	5,063,485	2,625,870	51,475	14,368,180
1924	6,728,265	5,376,470	1,903,555	12,710	14,021,000
Delano, 1923	262,440	165,765	102,545	.....	528,750
1924	261,755	190,55	139,275	.....	591,765
Mariposa, 1923	101,610	123,750	144,230	.....	369,590
19 4	101,670	85,785	88,925	.....	276,380
McKittrick, 1923	46,105	14,390	49,330	525	110,350
1924	45,740	15,375	24,065	.....	85,180
Taft, 1923	612,660	592,765	739,785	425	1,945,635
1924	614,050	578,185	528,810	.....	1,721,035
Tehachapi, 1923	50,410	63,730	43,800	50	157,990
1924	50,235	65,965	26,940	.....	143,140
Wasco, 1923					
1924	121,115	150,375	99,835	.....	371,325
Kings—					
Corcoran, 1923	85,820	187,505	147,180	80	420,585
1924	68,165	196,370	240,140	.....	504,675
Hanford, 1923	1,153,335	1,220,120	817,450	240	3,197,145
1924	1,040,185	1,286,435	839,310	1,260	3,167,190
Lemoore, 1923	226,620	188,040	213,550	.....	628,210
1924	212,115	202,125	202,885	.....	617,125

SCHEDULE E—Continued.

Assessment of Municipalities (Incorporated Cities and Towns) by County Assessors for the Years 1923 and 1924, Exclusive of Operative Property of Corporations Exempt from Local Taxation.

Counties and cities	Value real estate	Improvements thereon	Personal property	Money and solvent credits	Total
Lake—					
Lakeport, 1923	$277,205	$216,065	$116,745	$2,965	$612,980
1924	277,915	219,635	106,605	3,450	607,605
Lassen—					
Susanville, 1923	290,636	465,439	102,988	----------	859,063
1924	283,387	473,864	211,732	----------	968,983
Los Angeles—					
Alhambra, 1923	9,934,700	4,960,410	2,066,590	145,275	17,106,975
1924	11,866,900	6,772,500	2,781,290	346,915	21,767,605
Arcadia, 1923	3,181,075	802,540	291,820	34,315	4,309,750
1924	6,118,795	1,054,500	318,915	47,705	7,539,915
Avalon, 1923	1,087,630	666,490	323,830	1,980	2,079,930
1924	1,066,265	745,720	363,320	16,405	2,191,710
Azusa, 1923	503,230	556,010	229,480	33,770	1,322,490
1924	514,425	660,870	214,585	21,650	1,411,530
Beverly Hills, 1923	5,796,890	2,433,350	837,005	223,770	9,291,015
1924	15,067,055	3,718,160	1,352,580	38,205	20,176,000
Burbank, 1923	3,218,855	1,916,360	1,288,530	113,860	6,535,605
1924	6,979,875	2,690,010	1,554,055	175,400	11,399,340
Claremont, 1923	439,035	1,395,510	204,910	8,300	2,047,755
1924	416,200	1,502,290	259,855	7,565	2,185,910
Compton, 1923	2,381,845	665,045	344,245	8,360	3,399,495
1924	3,322,415	1,300,760	680,145	26,185	5,329,505
Covina, 1923	481,965	721,790	300,615	30,855	1,535,225
1924	521,230	770,430	361,770	58,210	1,711,640
Culver City, 1923	2,217,905	944,135	773,295	16,990	3,952,325
1924	3,501,805	1,448,110	665,510	52,370	5,667,795
El Monte, 1923	442,580	481,440	228,145	6,600	1,158,765
1924	1,045,015	573,450	319,890	24,815	1,963,170
El Segundo, 1923	1,562,085	1,701,500	10,166,640	4,495	13,434,720
1924	2,213,470	2,039,750	10,500,110	14,430	14,767,760
Glendale, 1923	17,038,690	9,004,400	3,288,300	329,270	29,660,660
1924	29,366,800	12,452,320	4,675,140	557,300	47,051,560
Glendora, 1923	651,105	774,000	211,220	15,720	1,652,045
1924	608,660	918,695	256,225	23,250	1,806,830
Hawthorne, 1923	670,730	544,380	135,230	3,890	1,354,240
1924	1,252,020	810,510	262,275	12,275	2,337,080
Hermosa Beach, 1923	2,068,025	1,115,470	363,225	39,610	3,586,330
1924	3,136,325	1,653,660	481,715	27,835	5,299,535
Huntington Park, 1923	3,361,545	2,563,880	1,016,825	83,910	7,026,160
1924	4,886,010	3,408,170	1,517,520	117,785	9,929,485
Inglewood, 1923	3,549,605	1,750,405	549,540	88,320	5,937,870
1924	6,336,910	2,725,570	1,118,390	77,070	10,297,940
La Verne, 1923	537,135	591,970	152,645	17,940	1,299,690
1924	529,200	620,440	151,795	14,740	1,316,175
Long Beach, 1923	51,263,110	25,488,490	11,906,865	1,797,675	90,446,140
1924	93,670,005	37,329,125	21,516,120	2,140,110	154,655,370
Los Angeles, 1923	523,863,065	272,227,350	181,942,685	16,303,265	994,336,385
1924	781,357,690	346,482,885	204,119,160	36,054,165	1,368,013,900
Lynwood, 1923	545,960	339,490	82,200	13,205	980,855
1924	866,005	546,620	121,145	9,415	1,543,185
Manhattan Beach, 1923	1,496,355	372,550	87,060	3,750	1,959,715
1924	2,857,900	431,760	1,689,455	3,540	4,982,655
Monrovia, 1923	2,064,970	2,269,125	758,160	51,835	5,144,090
1924	1,965,615	2,756,210	1,183,950	112,440	6,018,315
Montebello, 1923	1,977,065	1,041,200	4,691,245	30,780	7,740,290
1924	5,026,720	1,364,430	6,795,040	36,435	13,222,625
Monterey Park, 1923	1,778,045	787,440	180,480	10,145	2,756,110
1924	1,777,725	981,100	251,235	3,655	3,013,715
Pasadena, 1923	28,386,750	25,902,160	14,068,835	1,210,255	69,568,000
1924	43,772,290	29,823,750	16,296,945	2,564,375	92,457,360
Pomona, 1923	4,496,050	4,990,390	2,037,940	241,390	11,765,770
1924	4,449,040	5,640,895	2,460,205	451,725	13,001,865
Redondo Beach, 1923	3,270,605	1,493,420	698,320	24,650	5,486,995
1924	3,326,600	2,038,950	867,245	70,020	6,302,815
San Fernando, 1923	771,735	989,620	419,435	28,305	2,209,095
1924	1,779,120	1,177,830	684,570	97,805	3,739,325
San Gabriel, 1923	1,674,150	688,240	276,055	41,050	2,679,495
1924	3,401,480	923,390	327,335	30,230	4,682,435
San Marino, 1923	3,444,965	1,170,290	417,205	20,620	5,053,080
1924	4,465,465	1,228,080	618,355	25,940	6,337,840
Santa Monica, 1923	12,657,415	6,605,770	2,704,350	184,995	22,152,530
1924	24,606,485	8,628,470	3,448,190	352,790	37,035,935
Sierra Madre, 1923	1,192,320	878,110	301,040	21,845	2,393,315
1924	1,171,630	1,016,350	408,115	24,735	2,620,830
Signal Hill, 1923	----------	----------	----------	----------	----------
1924	1,821,995	519,910	343,920	31,725	2,717,550

SCHEDULE E—Continued.

Assessment of Municipalities (Incorporated Cities and Towns) by County Assessors for the Years 1923 and 1924, Exclusive of Operative Property of Corporations Exempt from Local Taxation.

Counties and cities	Value real estate	Improvements thereon	Personal property	Money and solvent credits	Total
Los Angeles—Continued.					
South Gate, 1923	$1,118,350	$399,435	$51,540	$8,205	$1,577,530
1924	1,242,360	710,440	133,685	8,450	2,094,935
South Pasadena, 1923	4,722,145	3,900,010	1,328,945	51,565	10,002,665
1924	4,771,935	4,843,500	1,843,880	214,215	11,673,530
Torrance, 1923	2,150,755	974,600	2,324,340	445,070	5,894,765
1924	4,165,115	1,314,340	4,762,785	315,825	10,558,065
Venice, 1923	6,824,450	3,803,100	882,060	49,295	11,558,905
1924	9,854,045	4,371,460	1,495,845	143,630	15,864,980
Vernon, 1923	6,665,710	2,887,660	7,895,440	661,480	18,110,290
1924	10,577,655	4,628,250	13,182,790	1,358,360	29,747,055
Watts, 1923	918,600	911,740	300,305	14,345	2,144,990
1924	1,931,815	1,221,660	385,810	28,980	3,568,265
West Covina, 1923	1,234,940	800,995	64,010	450	2,099,700
1924	1,649,340	803,390	88,240	4,580	2,545,550
Whittier, 1923	3,737,640	3,250,710	1,181,280	156,645	8,326,275
1924	3,723,195	4,423,790	1,647,230	143,570	9,937,785
Madera—					
Chowchilla, 1923	230,235	156,875	85,230	.....	472,340
1924	231,335	177,115	103,815	.....	512,265
Madera, 1923	1,178,880	1,025,165	636,115	.....	2,840,160
1924	1,179,628	1,125,412	538,052	.....	2,843,092
Marin—					
Belvedere, 1923	262,025	235,950	63,235	6,565	567,775
1924	257,380	234,140	78,875	100	670,495
Corte Madera, 1923	251,710	135,455	10,730	610	398,505
1924	253,305	140,500	24,295	.....	418,100
Larkspur, 1923	379,475	237,030	38,500	105	655,110
1924	387,560	254,645	47,930	.....	690,135
Mill Valley, 1923	877,465	721,765	105,615	695	1,705,540
1924	879,805	767,120	132,545	.....	1,779,470
Ross, 1923	634,440	494,180	104,890	14,435	1,248,745
1924	639,820	571,400	112,735	14,000	1,337,955
San Anselmo, 1923	857,555	752,520	139,080	1,160	1,750,315
1924	891,140	864,925	116,295	31,690	1,904,050
San Rafael, 1923	2,196,900	1,860,590	458,995	8,145	4,524,630
1924	2,254,840	2,009,645	502,115	4,615	4,771,215
Sausalito, 1923	825,775	623,130	113,910	2,170	1,564,985
1924	830,860	719,095	119,800	2,805	1,672,560
Mendocino—					
Fort Bragg, 1923	448,130	644,770	750,432	.....	1,843,332
1924	437,350	641,130	755,782	.....	1,834,262
Point Arena, 1923	90,840	77,400	56,227	.....	224,467
1924	90,610	73,840	57,070	.....	221,520
Potter Valley, 1923	374,970	56,840	84,456	.....	516,266
1924	414,520	65,380	90,770	.....	570,670
Ukiah, 1923	456,750	552,080	388,565	8,636	1,406,031
1924	463,120	635,430	369,920	13,025	1,481,495
Willits, 1923	235,990	317,880	302,645	.....	856,515
1924	230,910	327,390	324,930	.....	883,230
Merced—					
Atwater, 1923	102,540	169,470	87,830	5,705	365,545
1924	101,705	165,940	87,410	3,475	358,530
Gustine, 1923	72,460	199,010	131,115	.....	402,585
1924	73,015	200,745	134,986	.....	408,746
Livingston, 1923	100,365	125,450	51,440	230	277,485
1924	98,725	132,875	120,480	905	352,985
Los Banos, 1923	204,970	295,685	199,810	2,580	703,045
1924	204,725	354,445	217,944	.....	777,114
Merced, 1923	610,475	1,137,635	613,561	5,425	2,367,096
1924	715,895	1,241,255	750,610	27,923	2,738,683
Modoc—					
Alturas, 1923	112,435	276,020	132,820	2,375	523,650
1924	113,175	283,130	134,160	1,000	531,465
Monterey—					
Carmel, 1923	505,145	344,955	75,425	.....	925,525
1924	502,700	467,130	97,770	.....	1,067,600
King City, 1923	220,505	218,979	195,225	.....	634,700
1924	218,518	224,090	190,815	.....	633,420
Monterey, 1923	1,510,600	1,063,310	660,930	.....	3,234,840
1924	1,502,660	1,147,055	928,095	.....	3,577,810
Pacific Grove, 1923	842,935	891,235	175,785	.....	1,909,955
1924	865,465	910,920	206,965	.....	1,983,350
Salinas, 1923	1,223,275	1,203,135	586,500	.....	3 012,910
1924	1,242,270	1,244,620	664,580	.....	3,151,470
Soledad, 1923	36,505	74,130	78,040	.....	188,675
1924	35,740	77,845	78,615	.....	192,200

SCHEDULE E—Continued.

Assessment of Municipalities (Incorporated Cities and Towns) by County Assessors for the Years 1923 and 1924, Exclusive of Operative Property of Corporations Exempt from Local Taxation.

Counties and cities	Value real estate	Improvements thereon	Personal property	Money and solvent credits	Total
Napa—					
Calistoga, 1923	$281,820	$407,130	$172,852	$200	$862,002
1924	285,680	442,520	186,115		914,315
Napa, 1923	1,692,416	2,237,674	1,066,845	5,410	5,002,345
1924	1,696,520	2,324,550	1,093,440	6,000	5,120,510
St. Helena 1923	570,219	607,471	284,365		1,462,055
1924	570,435	643,915	297,755		1,512,105
Nevada—					
Grass Valley, 1923	363,115	775,695	279,075	3,405	1,421,290
1924	359,060	787,595	302,925	3,035	1,452,615
Nevada City, 1923	144,585	431,535	145,650	5,350	727,120
1924	144,240	427,415	173,165	2,150	746,970
Orange—					
Anaheim, 1923	2,596,175	2,617,645	916,555		6,130,375
1924	3,634,210	3,206,130	945,425		7,785,765
Brea, 1923	472,475	330,850	427,125		1,230,450
1924	479,480	388,255	335,225		1,202,960
Fullerton, 1923	4,625,565	2,379,660	5,147,725		12,152,950
924	4,827,965	2,927,495	3,754,735		11,510,195
Huntington Beach, 1923	1,956,095	614,025	3,651,160		6,221,280
1924	2,200,890	784,075	6,915,380		9,900,345
Newport Beach, 1923	1,286,075	540,650	161,325		1,988,050
1924	1,602,480	658,305	196,580		2,457,365
Orange, 1923	1,500,175	1,856,555	512,065		3,868,795
1924	2,457,735	2,063,555	601,385		5,122,675
Orangethorpe, 1923	833,535	883,845	82,865		1,800,245
1924					
Santa Ana, 1923	8,630,205	5,187,695	2,156,730	4,000	15,978,620
Seal Beach, 1923	754,145	103,970	48,400		906,515
1924	762,040	159,035	53,510		974,585
Stanton	508,895	158,295	52,825		720,015
1924	511,030	202,640	50,465		764,135
Placer—					
Auburn, 1923	402,110	703,085	130,535	1,000	1,236,730
1924	397,405	721,605	144,315	1,000	1,264,325
Colfax, 1923	44,725	138,915	27,800		211,440
1924	45,360	138,695	31,260		215,315
Lincoln, 1923	133,895	385,385	127,975	9,500	656,755
1924	132,020	431,765	142,505	9,500	715,790
Rocklin, 1923	32,375	64,655	14,820		111,850
1924	31,270	62,735	17,110		111,115
Roseville, 1923	446,605	995,505	191,575		1,633,685
1924	486,180	1,038,720	199,660		1,724,560
Riverside—					
Banning, 1923	358,500	340,090	130,730		
1924	354,950	400,650	127,660		883,260
Beaumont, 1923	155,340	161,610	81,720		
1924	157,660	215,570	79,240		452,470
Blythe, 1923	129,570	156,840	109,310		
1924	127,530	203,740	99,590		430,860
Corona, 1923	1,221,420	1,270,040	415,700		
1924	1,281,370	1,482,090	415,530		3,178,990
Elsinore, 1923	266,630	184,260	63,510		
1924	297,470	282,860	59,170		639,500
Hemet, 1923	347,600	391,250	240,180		
1924	341,610	504,830	170,940		1,017,380
Perris, 1923	55,730	72,980	50,700		
1924	58,390	95,600	57,400		211,390
Riverside, 1923	4,785,390	5,545,160	1,638,760		
1924	4,915,390	7,470,090	1,601,200		13,986,680
San Jacinto, 1923	199,050	159,250			
1924	199,730	213,300	81,810		494,840
Sacramento—					
Sacramento, 1923	35,043,550	25,594,430	13,103,830		73,741,810
1924	36,399,550	28,326,160	13,086,180		77,811,890
San Benito—					
Hollister, 1923	603,125	755,230	467,575		1,825,930
1924	604,905	819,755	458,575		1,883,235
San Juan Bautista, 1923	55,805	75,480	36,640		167,925
1924	55,805	85,395	35,645		176,845

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San Bernardino—					
Chino, 1923	$479,025	$412,240	$161,125	$175	$1,052,565
1924	582,880	430,200	154,600		1,167,680
Colton, 1923	706,055	600,010	308,580	650	1,615,295
1924	839,460	711,220	343,355		1,894,035
Needles, 1923	234,110	383,180	184,055		801,345
1924	256,565	371,885	154,450		782,900
Ontario, 1923	1,894,140	1,724,105	771,660	1,500	4,391,405
1924	2,002,720	1,915,025	750,185	70	4,673,000
Redlands, 1923	3,217,695	2,894,875	665,890	6,900	6,785,360
1924	3,307,170	3,055,115	705,465	5,750	7,073,500
Rialto, 1923	347,170	284,740	75,755		707,665
1924	386,610	330,820	98,800		816,230
San Bernardino, 1923	3,620,705	3,241,795	1,525,950	12,800	8,404,250
1924	5,846,820	4,008,715	1,713,715	13,900	11,583,150
Upland, 1923	1,071,235	743,385	247,530	9,375	2,071,525
1924	1,127,380	952,760	282,085	4,500	2,366,725
San Diego—					
Chula Vista, 1923	659,775	249,375	127,670	335	1,037,155
1924	654,775	300,790	169,665	3,550	1,128,780
Coronado, 1923	2,029,470	869,830	261,175	3,650	3,164,125
1924	2,023,350	963,570	351,550	2,450	3,340,920
East San Diego, 1923	870,500	418,930	134,065	160	1,423,655
1924	950,505	564,500	173,570	135	1,688,710
El Cajon, 1923	44,345	31,715	39,555		115,615
1924	47,825	50,130	54,055		152,010
Escondido, 1923	179,645	216,925	237,140		633,710
1924	186,655	245,915	259,550	1,900	692,020
La Mesa, 1923	199,125	150,705	155,800		505,630
1924	199,845	180,730	51,835	300	432,710
National City, 1923	994,750	357,045	149 220		1,501,015
1924	987,335	448,455	170,825		1,606 615
Oceanside, 1923	192,555	108,060	81,272	500	382,387
1924	194,535	156,550	94,905	40	446,030
San Diego, 1923	39,574,255	11,430,350	9,270,669	1,052,850	61,328,124
1924	40,526,490	12,905,095	10,4 6,751	318,405	64,236,741
San Joaquin—					
Lodi, 1923	1,233,590	2,257,295	851,730	13,890	4,356,505
1924	1,220 350	2,343,770	856,975	36,665	4,457,760
Manteca, 1923	414,730	421,515	180,555	8,530	1,025,330
1924	403,625	417,745	204,945	19,650	1,045,965
Stockton, 1923	16,319,575	14,125,775	6,856,805	395,090	37,697,245
1924	16,240,455	14,936,110	7,227,355	262,145	38,666,065
Tracy, 1923	469,620	533,065	278,115	14,685	1,295,485
1924	472,140	599,255	304,480	14,285	1,390,160
San Luis Obispo—					
Arroyo Grande, 1923	188,640	150,925	70,360		409,925
1924	182,365	170,720	78,900		431,985
Paso Robles, 1923	514,230	683,955	354,070		1,552,255
1924	505,065	706,620	428,445		1,640,430
San Luis Obispo, 1923	989,700	1,518,765	874,215		3,382,680
1924	995,060	1,698,400	918,675		3,612,135
San Mateo—					
Atherton, 1923					
1924	783,500	475,425	86,400	3,000	1,348,325
Burlingame, 1923	1,759,030	1,621,525	197,425		3,498,070
1924	1,727,460	1,871,910	249,370		3,848,740
Daly City, 1923	473,495	389,565	20,950		884,925
1924	479,630	412,230	29,425		921,285
Hillsborough, 1923	2,618,300	1,487,900	438,150	138,500	4,681,850
1924	2,648,700	1,566,400	463,100	135,000	4,813,200
Redwood City, 1923	968,055	770,930	209,925	1,300	1,929,370
1924	1,037,240	799,015	226,830	15,000	2,078,085
San Bruno, 1923	606,440	241,400	21,475		857,630
1924	623,520	257,690	18,950		900,160
San Mateo, 1923	2,005,785	1,619,065	338,330	5,000	3,920,185
1924	1,992,560	1,772,340	290,580	57,500	4,112,980
South San Francisco, 1923	734,020	725,060	375,310		1,822,890
1924	752,910	944,335	485,420		2,182,665
Santa Barbara—					
Lompoc, 1923	280,225	278,760	349,115		908,100
1924	278,655	282,095	387,685		948,435
Santa Barbara, 1923	6,178,345	8,128,345	3,829,820		18,136,510
1924	7,938,280	9,326,755	3,674,590	7,000	20,946,625
Santa Maria, 1923	887,955	977,925	729,095		2,594,975
1924	911,870	1,010,980	734,090		2,656,940

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Santa Clara—					
Alviso, 1923	$197,120	$41,545	$33,785	----------	$272,450
1924	195,535	41,370	26,900	----------	263,805
Gilroy, 1923	389,705	673,720	223,810	----------	1,287,235
1924	390,890	728,650	223,230	----------	1,342,770
Los Gatos, 1923	538,430	811,645	203,455	$1,315	1,554,845
1924	553,585	910,175	194,335	570	1,658,665
Mayfield, 1923	289,030	181,010	56,365	555	526,960
1924	285,685	240,365	53,905	----------	579,955
Morgan Hill, 1923	144,115	139,435	38,830	----------	322,380
1924	144,920	149,985	65,720	----------	360,625
Mountain View, 1923	248,575	438,850	121,875	----------	809,300
1924	251,765	478,995	122,820	100	853,680
Palo Alto, 1923	1,933,600	2,761,440	448,225	26,310	5,169,575
1924	2,055,845	3,198,910	428,080	25,415	5,708,250
San Jose, 1923	14,080,345	11,764,450	3,201,235	241,670	29,287,700
1924	14,159,840	12,145,170	3,143,560	150,220	29,998,790
Santa Clara, 1923	897,955	1,199,510	633,605	66,535	2,797,605
1924	946,130	1,609,165	689,880	57,260	3,302,435
Sunnyvale, 1923	421,250	441,920	254,125	200	1,117,495
1924	424,905	460,675	212,465	200	1,098,245
Santa Cruz—					
Santa Cruz, 1923	3,941,020	2,812,595	913,955	39,380	7,706,950
1924	3,958,845	2,930,115	992,110	2,170	7,884,240
Watsonville, 1923	1,195,505	1,248,905	767,915	10,725	3,223,050
1924	1,193,145	1,295,740	715,175	6,815	3,210,875
Shasta—					
Kennett, 1923	37,235	94,320	29,830	700	162,085
1924	37,360	92,610	45,980	900	176,850
Redding, 1923	520,465	910,375	837,970	----------	2,268,810
1924	518,110	976,775	862,265	100	2,357,250
Sierra—					
Loyalton, 1923	127,115	97,925	80,300	----------	305,340
1924	128,750	99,250	89,975	----------	317,975
Siskiyou—					
Dorris, 1923	36,115	63,715	57,500	----------	157,330
1924	35,885	65,535	41,225	----------	142,645
Dunsmuir, 1923	120,195	415,990	153,160	----------	689,345
1924	146,065	418,600	162,835	----------	727,500
Etna, 1923	47,575	112,570	64,940	----------	225,085
1924	46,450	110,245	69,925	----------	226,620
Fort Jones, 1923	24,855	89,315	93,230	----------	207,400
1924	26,015	92,680	84,405	1,000	204,100
Montague, 1923	68,165	107,705	103,510	----------	279,380
1924	66,940	107,520	110,565	----------	285,025
Mt. Shasta, 1923	72,340	133,085	67,195	----------	272,620
1924	87,130	146,485	83,020	----------	316,635
Yreka, 1923	138,905	403,530	184,585	----------	727,020
1924	149,870	409,105	189,715	14,570	763,260
Solano—					
Benicia, 1923	279,770	546,080	202,260	----------	1,028,115
1924	278,425	550,240	201,575	----------	1,030,240
Dixon, 1923	135,255	352,925	169,500	----------	657,680
1924	136,520	363,625	183,315	----------	683,460
Fairfield, 1923	81,180	189,300	122,970	2,719	396,169
1924	77,830	195,575	90,225	931	364,561
Rio Vista, 1923	81,450	295,575	125,875	----------	502,900
1924	82,600	304,575	134,793	----------	521,968
Suisun, 1923	128,050	246,400	131,145	----------	505,595
1924	129,895	250,875	111,680	----------	492,450
Vacaville, 1923	147,495	361,675	194,625	----------	703,795
1924	148,055	377,325	193,380	----------	718,760
Vallejo, 1923	1,694,205	3,534,550	922,030	10,000	6,160,785
1924	1,692,955	3,435,410	945,150	1,000	6,074,515
Sonoma—					
Cloverdale, 1923	113,380	169,070	29,925	----------	312,375
1924	113,380	174,570	44,965	----------	332,915
Healdsburg, 1923	336,615	541,930	291,930	----------	1,170,475
1924	338,915	584,710	234,490	----------	1,158,115
Petaluma, 1923	1,328,865	1,634,750	630,535	94,830	3,688,980
1924	1,336,265	1,706,375	666,125	5,960	3,714,725
Santa Rosa, 1923	2,086,855	3,014,580	1,058,895	----------	6,160,330
1924	2,081,310	3,282,700	1,099,535	----------	6,463,545
Sebastopol, 1923	195,505	378,850	143,585	----------	717,940
1924	196,765	397,345	183,790	----------	777,900
Sonoma, 1923	170,040	263,425	71,420	----------	504,885
1924	167,125	259,250	61,465	----------	487,840

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Stanislaus—					
Ceres, 1923	$68,845	$116,825	$67,625	$740	$254,035
1924	72,735	128,470	82,160	2,275	285,640
Modesto, 1923	2,584,910	3,434,980	1,995,750	85,635	8,101,275
1924	2,947,465	3,657,155	2,110,795	88,065	8,503,480
Newman, 1923	271,175	311,190	217,520	1,190	801,075
1924	270,820	324,280	241,475	1,705	838,280
Oakdale, 1923	266,520	390,450	227,670	5,275	889,915
1924	265,995	398,885	241,245	2,130	908,255
Patterson, 1923	171,015	166,880	98,600	150	436,645
1924	168,810	166,745	79,680	480	415,515
Riverbank, 1923	96,530	95,195	41,075	1,770	234,570
1924	97,200	106,780	58,575	1,275	263,830
Turlock, 1923	872,615	1,097,460	662,370	18,195	2,650,640
1924	876,785	1,143,675	725,915	31,030	2,777,405
Sutter—					
Yuba City, 1923	226,845	362,425	413,505	.....	1,002,775
1924	242,790	433,210	438,180	2,270	1,116,450
Tehama—					
Corning, 1923	181,960	391,400	299,965	5,450	788,775
1924	183,760	400,035	249,830	7,440	841,065
Red Bluff, 1923	458,125	888,565	555,945	21,130	1,923,765
1924	463,125	914,275	574,655	26,045	1,978,100
Tehama, 1923	38,805	43,155	24,425	1,500	107,885
1924	39,030	42,725	40,330	1,000	123,085
Tulare—					
Dinuba, 1923	435,850	1,051,260	778,200	.....	2,265,310
1924	442,980	1,122,440	650,380	.....	2,216,000
Exeter, 1923	237,140	497,840	192,765	.....	927,745
1924	238,740	537,380	189,540	.....	965,660
Lindsay, 1923	477,920	713,860	478,380	.....	1,670,166
1924	480,670	757,380	436,710	.....	1,674,760
Porterville, 1923	789,240	1,372,500	592,220	.....	2,753,960
1924	795,720	1,485,940	567,740	.....	2,849,400
Tulare, 1923	701,440	1,235,090	613,060	.....	2,549,590
1924	706,690	1,296,560	624,200	.....	2,627,450
Visalia, 1923	1,171,100	1,673,650	680,550	500	3,525,800
1924	1,191,360	1,871,640	670,480	1,200	3,734,680
Tuolumne—					
Sonora, 1923	272,620	626,510	238,840	.....	1,137,970
1924	272,385	657,055	257,315	.....	1,186,655
Ventura—					
Fillmore, 1923	342,790	346,140	156,855	.....	845,785
1924	352,430	353,520	185,280	.....	891,230
Ojai, 1923	177,170	118,550	48,190	.....	343,910
1924	174,690	133,110	50,740	.....	358,540
Oxnard, 1923	775,260	724,850	643,095	.....	2,143,205
1924	776,670	773,360	680,785	.....	2,230,815
Santa Paula, 1923	799,940	886,069	426,402	.....	2,112,412
1924	802,950	990,940	483,310	.....	2,277,200
Ventura, 1923	1,623,570	1,067,870	697,535	8,400	3,397,375
1924	1,655,150	1,239,270	786,855	7,000	3,688,275
Yolo—					
Davis, 1923	141,775	313,515	155,060	.....	610,350
1924	138,475	343,380	139,860	.....	621,915
Winters, 1923	146,375	194,060	145,315	.....	486,650
1924	146,690	194,615	147,745	.....	489,050
Woodland, 1923	676,980	1,578,250	665,815	.....	2,921,045
1924	669,810	1,635,675	629,980	.....	2,935,465
Yuba—					
Marysville, 1923	2,323,885	2,775,610	1,236,335	.....	6,335,830
1924	2,317,670	2,808,175	1,355,825	500	6,572,170
Wheatland, 1923	35,220	124,030	63,755	310	223,315
1924	34,970	128,570	66,765	.....	230,305

SCHEDULE F.

Showing Certain Kinds of Property Assessed and the Assessed Value for 1924.

Counties	Pure bred cattle		Stock cattle		Dairy cows		Hogs	
	Number	Value	Number	Value	Number	Value	Number	Value
Alameda	350	$35,000	25,000	$750,000	10,000	$600,000	17,500	$105,000
Alpine			1,164	24,784	163	5,705	20	100
Amador	11	885	14,365	278,213	1,459	50,750	2,101	9,664
Butte			25,500	382,500	6,500	227,500	18,300	91,500
Calaveras	40	2,000	8,500	150,000	20	600	1,500	7,500
Colusa	114	11,850	11,473	149,155	3,062	93,860	14,320	57,945
Contra Costa	450	67,500	10,280	205,600	8,360	250,800	5,670	22,680
Del Norte	50	5,000	550	11,100	5,150	180,250	55	275
El Dorado	120	6,000	9,000	135,000	1,300	39,000	1,800	18,000
Fresno	800	80,000	32,560	423,280	21,875	875,000	6,080	30,400
Glenn	2,000	120,000	10,000	150,000	5,157	180,495	9,115	36,458
Humboldt	537	34,005	27,511	581,945	29,010	1,160,400	3,136	15,670
Imperial			40,890	1,226,700	26,236	1,049,440	20,604	103,020
Inyo	432	20,275	20,528	294,074	1,708	51,435	740	3,241
Kern	445	21,940	83,046	1,149,080	21,908	326,670	*756,977	26,770
Kings			5,454	79,699	27,554	891,788		
Lake	9	450	4,222	65,865	1,731	51,990	2,173	7,330
Lassen	725	29,000	20,870	313,050	2,800	112,000	2,500	18,750
Los Angeles	799	45,515	11,286	242,095	21,908	1,137,330	3,266	14,251
Madera	278	13,155	26,917	350,546	5,398	211,795	*416,000	8,320
Marin			4,535	79,585	23,185	571,100	5,189	26,630
Mariposa			9,400	141,000	10	400	1,000	5,000
Mendocino	200	20,000	15,000	300,000	6,500	195,000	700	2,800
Merced	4,874	292,440	61,231	918,465	37,529	1,501,160	10,969	32,907
Modoc	119	8,615	43,145	593,450	2,964	88,920	2,520	6,815
Mono			3,120	59,170	184	5,520	85	615
Monterey	500	50,000	50,000	750,000	25,500	1,275,500	22,000	110,000
Napa	680	54,400	11,320	282,000	21,899	875,600	14,724	73,620
Nevada	60	2,400	5,680	85,200	695	24,325	408	2,650
Orange			11,000	440,000	10,300	1,802,500	1,250	12,500
Placer			5,000	75,000	700	24,500	1,000	5,000
Plumas	50	2,500	6,291	164,555	2,032	83,180	405	3,330
Riverside			7,000	119,000	7,668	209,423	2,301	10,355
Sacramento	1,500	105,000	7,000	140,000	4,000	140,000	2,000	8,000
San Benito	479	23,875	27,797	458,010	2,687	128,550	4,322	10,410
San Bernardino	86	10,580	7,181	327,390	9,709	751,050	20,524	130,530
San Diego			22,565	348,475	4,000	120,000	10,375	62,250
San Francisco								
San Joaquin	750	75,000	9,327	93,270	25,564	1,022,560	*728,809	21,865
San Luis Obispo	570	34,200	42,150	547,950	22,050	661,500	11,500	46,000
San Mateo	200	12,000	3,000	60,000	5,000	150,000	2,500	6,250
Santa Barbara	500	20,000	38,000	570,000	4,000	120,000	1,300	6,500
Santa Clara	1,500	150,000	26,780	669,500	5,000	250,000	3,000	30,000
Santa Cruz	170	8,500			3,501	87,525	730	3,650
Shasta			27,409	377,945	1,559	54,565	10,315	35,070
Sierra	300	7,500	3,000	45,000	1,200	30,000		
Siskiyou	3,160	189,600	13,682	273,640	5,473	218,920	5,828	29,140
Solano	380	22,800	5,801	87,315	7,896	236,880	3,171	15,855
Sonoma	260	15,600	27,630	552,600	30,610	612,200	4,140	24,840
Stanislaus	1,736	105,175	12,322	159,190	57,314	1,742,470	*760,260	22,810
Sutter	30	1,575	1,725	28,555	4,039	132,720	4,805	20,033
Tehama	65	3,900	29,605	444,075	2,751	96,285	6,730	26,920
Trinity			8,780	131,700	350	10,500	910	4,550
Tulare	500	35,000	65,000	845,000	5,000	200,000	15,000	45,000
Tuolumne	40	3,600	9,675	115,500	200	1,800	685	3,425
Ventura	57	5,700	3,230	32,300	3,910	117,300	9,160	37,150
Yolo	1,845	111,220	6,825	86,100	7,620	266,700	26,000	78,100
Yuba			7,399	221,970	2,795	97,825	1,095	4,380

*Pounds.

SCHEDULE F—Continued.

Showing Certain Kinds of Property Assessed and the Assessed Value for 1924.

Counties	Mules		Horses		Sheep		Stock goats	
	Number	Value	Number	Value	Number	Value	Number	Value
Alameda	1,000	$75,000	7,100	$355,000	20,000	$45,000	500	$6,250
Alpine			73	3,615	2,400	7,200		
Amador	58	2,436	1,326	48,262	9,204	26,783	2,809	4,157
Butte	1,200	60,000	4,800	192,000	53,000	212,000	750	1,500
Calaveras	30	1,200	800	24,000	8,000	32,000	1,200	1,200
Colusa	1,269	64,435	2,531	86,040	103,460	422,355		
Contra Costa	240	12,000	5,300	265,000	23,000	62,500		
Del Norte			218	10,900				
El Dorado	60	4,500	3,000	120,000	12,000	48,000	8,000	12,000
Fresno	4,100	205,000	13,780	344,500	119,790	359,370	275	550
Glenn	1,286	75,025	2,456	86,692	119,470	499,432	1,689	*1,925
Humboldt	188	5,465	4,554	190,080	43,618	177,760	4,211	8,435
Imperial	2,930	117,200	7,834	156,680	26,722	53,444		
Inyo	637	13,370	2,901	65,615	20,156	104,670	1,775	4,880
Kern	3,067	84,790	8,418	218,385	161,604	409,630	1,001	2,375
Kings	993	31,205	4,520	141,500	33,948	119,364	50	450
Lake	92	2,920	1,450	55,800	11,711	29,625	896	1,435
Lassen	300	9,000	5,000	150,000	50,000	300,000	80	480
Los Angeles	4,425	198,190	8,903	337,280	9,588	15,845	862	5,915
Madera	1,719	53,115	4,120	117,000	29,427	81,518	411	774
Marin	2	70	1,766	81,430	3,876	12,580	88	205
Mariposa	160	4,800	800	24,000	20,650	103,050	500	1,000
Mendocino	200	6,000	2,500	75,000	80,000	240,000	2,500	2,500
Merced	1,911	57,330	9,495	237,375	90,181	315,633	1,779	3,558
Modoc	490	12,470	6,627	157,980	52,532	210,130	263	965
Mono	40	2,350	479	21,555	14,650	49,700	270	1,080
Monterey	950	57,000	11,000	440,000	18,000	54,000	1,200	3,600
Napa	5,614	280,700	6,330	253,200	26,800	134,000	80	800
Nevada	60	1,500	835	33,400	6,450	25,800	650	1,300
Orange	2,350	352,500	5,100	510,000				
Placer	300	9,000	2,400	60,000	30,000	120,000	450	1,350
Plumas	75	3,690	1,278	86,425	2,792	8,935		
Riverside	1,540	38,540	4,886	149,390	3,811	11,420	2,422	9,345
Sacramento	100	7,500	1,000	40,000	20,000	80,000	150	600
San Benito	29	1,005	3,564	131,735	25,613	67,015	470	990
San Bernardino	871	99,570	3,799	344,706	75	900	71	1,050
San Diego	1,250	37,500	8,500	255,000	5,950	17,850		
San Francisco								
San Joaquin	1,042	47,932	10,281	411,240	33,885	118,597		
San Luis Obispo	425	21,250	7,460	223,800	3,500	12,250	125	250
San Mateo	75	3,750	700	14,000	6,000	18,000	500	1,000
Santa Barbara	300	9,000	2,000	80,000	33,000	66,000		
Santa Clara	150	15,000	3,000	150,000			150	1,800
Santa Cruz	13	325	251	6,250	355	887		
Shasta	305	11,715	2,846	72,505	7,747	30,990	1,625	2,450
Sierra	10	300	400	10,000	1,000	2,500		
Siskiyou	147	7,350	4,893	171,255	7,030	21,090	210	630
Solano	985	49,250	4,746	237,300	85,630	342,520		
Sonoma	290	14,500	8,210	410,000	32,420	81,050	3,720	5,580
Stanislaus	1,788	60,145	10,571	362,045	38,915	102,390	300	1,000
Sutter	578	25,090	2,489	82,975	30,356	119,845	18	155
Tehama	1,127	50,715	3,585	70,700	187,275	749,100	7,530	11,295
Trinity	100	3,700	800	30,700	2,600	7,800	720	1,440
Tulare	2,000	100,000	9,000	360,000	12,000	36,000	500	1,000
Tuolumne	26	910	1,070	32,100	3,719	14,876	879	1,758
Ventura	1,580	78,000	4,920	246,000	5,000	10,000		
Yolo	1,500	73,120	5,275	153,000	88,400	342,100		
Yuba	233	6,990	1,692	43,200	27,295	109,180	105	1,050

SCHEDULE F—Concluded.

Showing Certain Kinds of Property Assessed and the Assessed Value for 1924.

Counties	Milk goats		Poultry		Automobiles	
	Number	Value	Dozen	Value	Number	Assessment
Alameda	3,250	$80,250	45,000	$450,000	76,000	$17,480,000
Alpine			36	108	29	7,200
Amador			375	1,660	1,269	239,282
Butte	65	650	9,300	4,650	6,603	1,107,434
Calaveras	40	400	1,000	3,000	900	270,000
Colusa			1,400	7,000	2,289	458,300
Contra Costa			8,760	30,660	8,160	2,040,000
Del Norte					327	86,655
El Dorado	800	4,000	3,000	15,000	1,540	246,400
Fresno	175	1,750	13,325	66,625	31,132	7,783,000
Glenn	100	1,000	7,326	36,630	2,491	426,984
Humboldt	63	630	4,669	23,665	8,415	1,737,365
Imperial			8,160	40,800	8,446	1,266,900
Inyo			1,541	7,705	1,285	325,250
Kern	20	500	7,717	39,095	15,229	2,488,955
Kings			3,925	11,175	3,577	561,165
Lake	285	855	2,331	11,655	1,437	232,160
Lassen			1,200	6,000	1,090	327,000
Los Angeles	1,617	11,655	90,698	288,462	307,808	65,958,480
Madera	24	155	2,129	11,076	3,733	544,146
Marin			19,317	60,745	4,230	897,575
Mariposa			200	1,000	476	119,000
Mendocino			10,000	30,000	4,200	840,000
Merced	94	940	11,058	55,290	6,108	855,120
Modoc			1,293	6,465	927	144,245
Mono	2	20	541	2,705	101	30,875
Monterey	500	5,000	10,425	83,400	7,486	2,245,800
Napa	2,765	13,825	24,050	120,250	4,440	1,332,000
Nevada			525	2,625	1,632	331,415
Orange	350	7,000	7,500	90,000	20,630	12,378,000
Placer			10,000	50,000	4,000	400,000
Plumas			360	1,115	828	184,245
Riverside			12,866	45,958	7,620	1,152,755
Sacramento	100	2,500	25,000	125,000	18,000	3,600,000
San Benito			5,844	29,220	2,607	421,720
San Bernardino	222	2,808	9,882	97,005	16,200	7,008,780
San Diego	1,000	2,500	15,390	76,950	21,600	5,184,000
San Francisco					59,400	18,414,000
San Joaquin	325	650	15,363	76,815	16,616	3,174,768
San Luis Obispo			2,350	11,750	5,465	655,800
San Mateo	500	2,000	8,000	20,000	9,000	1,350,000
Santa Barbara			6,250	31,250	11,312	3,110,800
Santa Clara	350	2,450	30,190	181,140	18,000	5,400,000
Santa Cruz	28	280	7,626	38,130	6,077	1,132,080
Shasta			1,793	8,965	3,083	582,060
Sierra			5	50	256	90,550
Siskiyou			6,215	31,075	205	672,220
Solano			4,884	24,420	7,333	1,598,780
Sonoma	95	190	19,850	69,475	13,160	3,684,800
Stanislaus	287	1,560	23,412	117,060	13,522	2,441,525
Sutter			4,786	24,587	2,470	471,830
Tehama			4,024	20,120	3,186	669,060
Trinity			400	2,000	300	60,000
Tulare	150	1,500	5,000	25,000	15,000	3,000,000
Tuolumne	12	60	573	2,290	1,160	232,000
Ventura					10,152	2,234,500
Yolo			4,650	22,150	4,215	895,325
Yuba			362	1,810	1,965	383,590
Totals					804,719	$190,965,894

SCHEDULE G.

Number of Fruit Trees Growing in Spring of 1924.

Counties	Apple		Apricot		Cherry		Fig	
	Bearing	Non-bearing	Bearing	Non-bearing	Bearing	Non-bearing	Bearing	Non-bearing
Alameda	25,250	200	25,000	2,000	92,000	1,700	2,100	
Alpine	650		8		58			
Amador	2,000	500	1,365	60	1,000	75	500	20
Butte	20,000	2,880	2,980	2,720	2,800	112	2,300	3,360
Calaveras	6,000	1,000	2,000	100	500	100	400	100
Colusa	800		6,000	1,500	100		3,000	
Contra Costa	15,500	1,600	70,100	58,000	11,350	8,800		50
Del Norte								
El Dorado	400	198	25	5	100	130	20	5
Fresno	22,500	700	15,600	2,600			670,000	55,500
Glenn	7,500	4,000	100,000	100,000	2,000	1,500	8,000	100,000
Humboldt	59,250	500	550		2,100	100	40	
Imperial			2,070	1,600			1,000	359
Inyo								
Kern	1,270	339	673	1,697	9	6	44	350
Kings			220,500	12,500				
Lake	19,470	1,453	2,868	486	819	266	730	135
Lassen	9,000	4,000	4,000	400	2,800	800		
Los Angeles	41,720	3,206	75,909	15,361	9,630	157	7,343	1,131
Madera	4,836	2,688	21,470	54,656	18	2	18,616	46,862
Marin	2,500		2,000		2,000	500		
Mariposa	20,000	3,000	100		20		200	
Mendocino	90,000	30,000	150		1,500		250	
Merced	7,800	3,100	72,000	138,400	300	800	243,000	798,750
Modoc	27,400	15,600	825	120	2,390	700		
Mono								
Monterey	102,950	17,700	53,500	18,500	3,225	1,200		
Napa	122,112	71,625	49,000	22,900	68,500	28,700	13,960	4,300
Nevada	22,200	1,800			1,875	150		
Orange	7,800		30,000				1,600	
Placer	24,000	596	20,300	2,682	63,290	7,899	6,196	383
Plumas	3,340	3,340			162	460		
Riverside	243,900	20,100	69,490	74,300	51,900	13,500	7,300	2,500
Sacramento	24,500	60,000	25,000	59,000	31,400	30,000	9,750	6,000
San Benito	14,129	2,656	346,504	56,297	3,296	165		
San Bernardino	396,550	32,620	287,651	17,767	38,041	24,307	3,850	2,325
San Diego	21,000		13,000		1,250		1,000	
San Francisco								
San Joaquin	14,923	3,169	90,689	53,788	171,188	99,855	85,135	55,174
San Luis Obispo	99,500	54,400	95,300	12,500	6,200	2,500	4,000	800
an Mateo	46,150		12,800		1,200		295	
Santa Barbara	5,000	5,600	12,500	12,000	1,600	710		500
Santa Clara	131,500		1,876,800		451,000		4,700	
Santa Cruz	454,052	13,441	74,267	6,810	12,616	4,700	64	
Shasta	24,300	4,500	3,150	1,610	2,700	1,000	2,700	500
Sierra	6,000	500	1	1	200	80		
Siskiyou								
Solano	3,500		240,300		99,700		6,000	
Sonoma	361,270	301,650	3,880	2,420	70,120	41,760	2,410	30
Stanislaus	2,950	1,700	152,250	169,100	3,200	725	99,400	68,800
Sutter	3,407		4,299	803	10,616	8,255	4,960	
Tehama	18,500	60,000	38,000		2,860		10,150	
Trinity	6,300	3,200	200	350	350	200	100	
Tulare	18,000		30,000		400		86,000	
Tuolumne	32,000	3,000	250	200	400	300	600	150
Ventura	20,516	6,926	596,882	229,986	1,796	121	416	1,350
Yolo	5,000		172,000		2,000		18,600	
Yuba*	18		55		85		293	

*Given in acres.

SCHEDULE G—Continued.

Number of Fruit Trees Growing in Spring of 1924.

Counties	Olive		Peach		Pear		Plum	
	Bearing	Non-bearing	Bearing	Non-bearing	Bearing	Non-bearing	Bearing	Non-bearing
Alameda	2,250		45,200	2,350	57,500	2,200	35,000	1,400
Alpine					60		120	
Amador	310		2,000	200	5,480	125	1,500	
Butte	196,000	10,850	20,350	68,000	38,000	5,860	9,260	4,320
Calaveras	5,000	3,000	3,000	1,000	500	100	1,500	100
Colusa	1,000		5,000	40,000	5,000	500	6,000	2,000
Contra Costa			30,000	25,000	112,000	77,000	40,800	5,000
Del Norte								
El Dorado	50	10	600	200	2,500	1,200	800	300
Fresno	50,000		3,005,000	12,000			27,000	8,500
Glenn	30,000	20,000	250,000	200,000	50,000	50,000	8,000	15,000
Humboldt			7,400		6,000		600	
Imperial	3,160	981	479		3,305	5,460		
Inyo								
Kern	840	100	586	640	1,068	272	155	905
Kings			39,550	22,250				
Lake	2,120	90	2,565	2,180	140,935	294,299	337	315
Lassen			5,000	200	700	300	1,200	500
Los Angeles	253,852	1,608	66,576	13,987	98,463	66,166	16,646	3,083
Madera	16,518	4,206	144,716	121,314	1,141	1,764	10,315	15,838
Marin			1,500		2,500	2,000		
Mariposa	400		1,000		400	600	100	
Mendocino	100		7,500		60,000	150,000	3,000	
Merced	24,000	9,000	755,900	1,070,800	155,000	5,600	17,700	16,170
Modoc			3,200	300	1,500	200	720	50
Mono								
Monterey			7,000	12,700	18,450	27,750	4,500	11,450
Napa	7,310	1,800	130,800	55,000	146,700	85,500	110,000	40,300
Nevada			12,300	1,500	155,000	33,000	23,200	4,200
Orange	5,000		9,000		3,000		2,200	
Placer	36,894	861	1,367,056	105,079	334,250	102,626	464,599	107,258
Plumas			126	541	620	485	430	407
Riverside	168,400	43,300	514,200	124,300	109,600	39,000	5,100	1,400
Sacramento	262,500	78,750	234,100	220,000	640,000	400,000	260,000	120,000
San Benito			39,840	44,109	55,081	48,467		
San Bernardino	82,500	13,275	782,100	122,850	104,040	51,030	13,500	4,590
San Diego	24,750		7,000	1,500	1,700			
San Francisco								
San Joaquin	65,081	5,288	985,253	154,646	107,870	48,435	58,450	68,526
San Luis Obispo	2,000	400	135,000	10,000	125,000	20,000	16,500	5,500
San Mateo	1,000		6,950		5,800		3,575	
Santa Barbara	12,000	285	15,000	3,300	1,500	1,300	542	200
Santa Clara	5,000		705,800		662,700		151,300	
Santa Cruz	41		4,736	980	14,320	11,924		
Shasta	6,200	31,000	66,000	28,500	10,850	4,600	18,000	1,500
Sierra			100	300	200	260	400	75
Siskiyou								
Solano	3,000		649,800		356,000		198,000	
Sonoma	1,560	300	50,720	8,010	91,770	20,720	16,390	2,170
Stanislaus	21,600	53,500	524,700	553,300	15,600	7,300	9,700	5,600
Sutter	1,756		552,028	257,494	16,144	2,000	7,360	4,022
Tehama	98,220	5,000	938,997	11,051	78,100	660	4,000	29,597
Trinity			1,600	700	1,000	500	350	300
Tulare	125,000		120,000		1,500		60,000	
Tuolumne	60	20	8,000	1,500	2,000	2,000	2,000	500
Ventura	30,907		6,936	4,466	3,599	15,834	1,222	840
Yolo	6,000		112,000		73,000		15,000	
Yuba*	720		2,950		780			

*Given in acres.

SCHEDULE G—Continued.

Number of Fruit Trees Growing in Spring of 1924.

Counties	Prune		Lemon		Lime		Orange	
	Bearing	Non-bearing	Bearing	Non-bearing	Bearing	Non-bearing	Bearing	Non-bearing
Alameda	91,000	7,600	1,400		50		3,700	
Alpine	22							
Amador	3,000		20	4			375	60
Butte	550,560	139,440	3,680				148,000	4,240
Calaveras	700	100	50	50			250	100
Colusa	250,000	125,000	50,000	1,000	1,000		3,500	300
Contra Costa	44,200	20,000						
Del Norte								
El Dorado							5	
Fresno	52,500	7,000					35,000	
Glenn	200,000	100,000	6,000	5,000			50,000	50,000
Humboldt	5,900							
Imperial	30		318	165			1,010	1,350
Inyo								
Kern	475	307					1,270	30
Kings	40,000	15,294						
Lake	73,836	97,181						
Lassen	1,200	500						
Los Angeles	4,860	3,142	158,011	49,400			802,772	135,603
Madera	9,925	5,454	53	34			119	4
Marin	2,000	1,500						
Mariposa	100		100				800	
Mendocino	100,000	85,000	1					
Merced	135,000	162,000	1,200	400			900	1,600
Modoc	50	30						
Mono								
Monterey	3,150	13,300						
Napa	1,140,000	890,000					15,000	2,000
Nevada								
Orange	200		485,000				3,600,000	
Placer	15,600		466				29,000	
Plumas								
Riverside	39,400	10,600	320,400	14,880			1,651,230	46,400
Sacramento	230,000	100,000	7,500				117,250	
San Benito	304,694	151,869						
San Bernardino	4,050	1,800	390,000	23,250			3,349,960	119,065
San Diego	4,200		105,000				69,000	
San Francisco								
San Joaquin	164,075	71,352	627	254			5,178	684
San Luis Obispo	220,000	185,000	4,200	100			5,100	500
San Mateo	5,000		300				500	
Santa Barbara	1,856	100	101,000	11,590			7,500	3,700
Santa Clara	6,796,000		21,000		1,000		4,000	
Santa Cruz	49,638	7,900	160					
Shasta	95,000	41,000	250				500	200
Sierra								
Siskiyou								
Solano	604,000		3,000		300		8,500	
Sonoma	802,580	524,440	210	20			7,270	30
Stanislaus	37,100	16,300					7,300	3,300
Sutter	362,119	343,103					2,500	
Tehama	136,750	46,430	1,000	93			16,250	108
Trinity	250	200						
Tulare	500,000		125,000		100		1,700,000	
Tuolumne	1,100	250	15				45	
Ventura	16,284	3,160	510,706	28,179			288,936	144,288
Yolo	142,800						1,800	
Yuba*	1,437						34	

*Given in acres.

SCHEDULE G—Concluded.

Number of Fruit Trees Growing in Spring of 1924.

Counties	Pomelo		Almond		Walnut	
	Bearing	Non-bearing	Bearing	Non-bearing	Bearing	Non-bearing
Alameda	20		45,000	4,300	7,000	2,900
Alpine						
Amador			3,500	150	200	75
Butte	950	200	359,310	40,040	30,100	12,950
Calaveras			1,400	400	1,500	500
Colusa	2,000		300,000	150,000		
Contra Costa			115,000	60,000	37,000	35,000
Del Norte						
El Dorado			60	10	50	100
Fresno						
Glenn			150,000	100,000	25,000	20,000
Humboldt					750	3,000
Imperial	100,210	120,640				
Inyo						
Kern	24		111	80	69	11
Kings						
Lake			21,210	23,900	6,180	20,129
Lassen			20	20	100	100
Los Angeles	14,423	1,109	33,522	4,475	91,198	53,584
Madera			18,315	5,365	178	59
Marin						
Mariposa			50		150	
Mendocino			600		10,000	
Merced			320,500	180,000	10,250	20,200
Modoc						
Mono						
Monterey			16,500	106,650	4,000	13,600
Napa			58,000	8,000	51,500	0,500
Nevada					1,975	640
Orange					325,000	
Placer	450		12,184		1,334	
Plumas						
Riverside	36,240	11,760	142,300	5,300	50,880	68,880
Sacramento	3,000		237,600	60,000	6,000	
San Benito			10,572	4,096	5,668	3,650
San Bernardino	127,500	6,630			48,000	42,600
San Diego	600		900		3,800	
San Francisco						
San Joaquin			470,953	50,298	105,274	36,662
S n Luis Obispo	200		775,000	900,000	51,000	5,400
San Mateo			1,450		850	
Santa Barbara	1,000	120		400	103,500	14,000
Santa Clara	1,000		40,500		220,200	
Santa Cruz			30		110	
Shasta			5,400	320	1,200	275
Sierra					10	45
Siskiyou						
Solano			123,500		9,600	
Sonoma			5,720	230	7,590	160
Stanislaus			525,800	61,450	37,600	12,500
Sutter			151,341	2,050	6,276	502
Tehama			66,725	4,230	4,000	470
Trinity			50		1,000	900
Tulare	45,000		15,000		30,000	
Tuolumne			350	350	1,200	1,800
Ventura			32,910	4,670	225,880	129,764
Yolo			496,200			
Yuba*			120		24	

*Given in acres.

SCHEDULE II.

Acres of Grapevines Growing in Spring of 1924.

Counties	Table grapes		Raisin grapes		Wine grapes	
	Bearing	Non-bearing	Bearing	Non-bearing	Bearing	Non-bearing
Alameda	140				5,000	1,750
Alpine						
Amador	50	20			150	50
Butte	40,000	30,000	8,500	1,500	16,000	5,800
Calaveras	50	50	10	10	1,500	1,000
Colusa	650	650	840	800	100	50
Contra Costa	425				5,500	3,000
Del Norte						
El Dorado	75	75			800	300
Fresno	16,500	1,200	110,000	3,000	25,000	1,700
Glenn	200	600	300	1,200		
Humboldt						
Imperial	4,828	2,600				
Inyo						
Kern	2,573	5,897	5,220	9,458	194	1,265
Kings			11,250	3,100	250	
Lake					433	364
Lassen	40					
Los Angeles	2,540		1,500		208	
Madera	832	3,677	6,440	13,102	1,846	4,172
Marin					200	
Mariposa	10	50	40	10		
Mendocino					3,500	2,500
Merced	2,860	4,330	4,220	7,960	1,350	1,280
Modoc						
Mono						
Monterey	200					
Napa						
Nevada	60	20			29,300	8,088
Orange	500				105	40
Placer	10,100	21,500			4,675	28,000
Plumas						
Riverside	781	2,293	914	1,991	497	702
Sacramento	11,500	900			4,000	301
San Benito	25				500	400
San Bernardino	7,838	1,414	2,274	2,731	15,073	6,571
San Diego	1,275		5,900			
San Francisco						
San Joaquin	41,242	1,184			30,812	594
San Luis Obispo	150	215			375	140
San Mateo						
Santa Barbara			50	600		
Santa Clara	6,524	400	3,000		3,000	100
Santa Cruz	120				195	
Shasta	40	20	30	40	120	70
Sierra						
Siskiyou						
Solano	8,000				4,425	
Sonoma	145				15,540	540
Stanislaus	4,876	3,464	13,790	3,114	2,051	2,977
Sutter	39		6,229	726	76	59
Tehama	200		915	505	680	
Trinity						
Tulare	7,500		50,000		3,000	
Tuolumne	400	250			160	6,400
Ventura						
Yolo	1,060		2,300		1,200	
Yuba	669		1,585		270	

SCHEDULE I.

Number of Acres Sown in Crops, 1924.

Counties	Wheat	Oats	Barley	Corn	Hay	Rye	Cotton
Alameda	7,500	5,000	12,500	1,000	45,000		
Alpine	240	40	25		940		
Amador	4,000	3,500	4,550	320			
Butte	25,500	1,600	14,000	300	30,250		
Calaveras	2,500	1,000	1,500	50	5,000	200	
Colusa	30 000	400	100,000	2,500	10,000		
Contra Costa	9,350	8,900	48,500	4,800	31,000		
Del Norte							
El Dorado	600	1,000	500	120	4,000	400	
Fresno	20,000	2,000	25,000				38400,
Glenn	18,000	1,000	50,000	2,000			
Humboldt		4,000	2,000	75	3,500		
Imperial	2,465	1,264	40,930	19,918			87,621
Inyo							
Kern	12,000		3,000	5,000	25,000		18,000
Kings	25,000		15,000				
Lake	2,000	600	1,700	400	6,400		
Lassen	24,000	1,900	9,000		45,000	4,000	
Los Angeles	2,620	1,926	2,520	1,654	756		
Madera	4,476	228	10,786	150		27	982
Marin	40			72	12,315		
Mariposa	1,000	200	1,200	100	6,000	10	
Mendocino	2,500	5,000	1,000	750	15,000	35	
Merced	4,200	2,560	22,000	4,200	5,540	1,140	
Modoc	13,500	1,000	8,000		57,500	8,000	
Mono					2,500		
Monterey	25,000	4,000	37,000	1,000	35,000		
Napa	3,500	6,700	6,900	1,800	45,000		
Nevada	215	340	190	25	3,010	70	
Orange	18,000	1,500	35,000		6,500		
Placer	5,000	700	500		4,000		
Plumas	1,320	5,430	240				
Riverside	6,820		46,463	991	28,251		20,508
Sacramento	50,000	15,000	30,000	1,000	20,000		
San Benito	2,500	450	2,700		5,100		
San Bernardino	75	200	500	7,000	14,000		
San Diego	16,000	8,000	30,000	4,750	32,500		
San Francisco							
San Joaquin	120,000	20,000	160,000	12,000	4,000	250	
San Luis Obispo	120,000	2,500	50,000	300	60,000		
San Mateo	500	2,000	1,750	150	8,100		
Santa Barbara	1,100	500	29,000	400	21,000		
Santa Clara	2,300	3,800	19,000	155	32,000		
Santa Cruz				135	2,760		
Shasta	10,000	5,000	1 250	750	15,000	150	
Sierra	1,000	500	1,000		3,500	400	
Siskiyou	19,230	2,825	6,840		17,300	2,080	
Solano	115,600	13,000	148,000	950	50,000		
Sonoma	1,790	1,460	1,730	230	58,110		
Stanislaus	2,770	7,824	25,690	2,100	3,565	125	
Sutter	19,057	2,728	54,461		1,956		
Tehama	42,000	1,260	58,820	320	46,480		
Trinity	2,000	1.400	350	500	3,500		
Tulare	15,000	2,500	10,000	5,000	6,000		3,000
Tuolumne	1,000	1,100	800		2,000		
Ventura							
Yolo	31,000		125,000	1,200			
Yuba	10,975	4,632	9,097	190	1,740		

SCHEDULE I—Continued.

Number of Acres Sown in Crops, 1924.

Counties	Hops	Rice	Potatoes	Onions	Beans	Peas	Asparagus
Alameda			5,000	500	450	900	350
Alpine			3				
Amador			100				
Butte		23,400	125		160		
Calaveras	10		200	30	50	10	
Colusa		1,500	500	100	2,500		
Contra Costa			7,100	1,000	1,800		1,600
Del Norte							
El Dorado			120	30	20	15	
Fresno			640	150	100		160
Glenn		20,000					
Humboldt			500				
Imperial				181	114	1,080	1,278
Inyo							
Kern			1,500	100			
Kings							
Lake	130		125		300		
Lassen			1,500	150			
Los Angeles			1,092		1,433		
Madera			50				
Marin			508		15	1,100	
Mariposa			300	10	5		
Mendocino	550		500	5	20	10	
Merced			3,160	92	800	60	32
Modoc							
Mono			20				
Monterey			2,000	120	2,500	1,400	
Napa			15,000		250		
Nevada			240		60		
Orange			1,800		32,000		
Placer							
Plumas			36				
Riverside			1,132	1,273	408		
Sacramento	1,830		500	750			19,000
San Benito			25				
San Bernard no			580	100	200		
San Diego					7,500		
San Francisco							
San Joaquin	400		26,000	4,000	13,000	500	4,500
San Luis Obispo			400	100	8,000	500	
San Mateo			750	50	300	750	
Santa Barbara			300	300	20,000	300	
Santa Clara			450	2,380	200	5,860	
Santa Cruz	40		820	116	300	420	
Shasta	50		300	15	150		
Sierra			100				
Siskiyou			1,120				
Solano					5,500		7,000
Sonoma	3,210						
Stanislaus			1,050		21,750	350	
Sutter							
Tehama	575		220	55	475		
Trinity			350		50		
Tulare			150	100	150	100	
Tuolumne			25	10	8		
Ventura					26 500		
Yolo	200	13,000	900	400	7,800		1,000
Yuba	88	2,865			1,145		

SCHEDULE I—Concluded.

Number of Acres Sown in Crops, 1924.

Counties	Tomatoes	Straw-berries	All other berries	Canta-loupes	Other melons	Sugar beets	Standing alfalfa
Alameda	1,700	450	350	5	5	3,750	2,000
Alpine							400
Amador							1,130
Butte		75	60	40	100		9,300
Calaveras	20	5	10	4	10		200
Colusa				50	100		10,000
Contra Costa	950						4,250
Del Norte							
El Dorado	15	75	100	5	10		600
Fresno	150	800	100	100	200		100,000
Glenn	500	100	200				25,000
Humboldt							2,500
Imperial	827	582		22,703	2,796		108,275
Inyo							
Kern	100	20	19	1,600	2,200	400	35,000
Kings							23,315
Lake							2,475
Lassen						50	25,000
Los Angeles	206	14	28	102	20	740	1,996
Madera	25	15	10	50	100		11,537
Marin						400	75
Mariposa	2	1	5	1	3		40
Mendocino	10	25	20	150	200		2,500
Merced	98	22	18	240			48,734
Modoc							19,000
Mono							3,000
Monterey	100	150	110			16,000	23,100
Napa							6,000
Nevada				30			40
Orange						8,000	2,700
Placer							500
Plumas							5,340
Riverside	394			12	460	340	26,375
Sacramento	15,000	800	200	100	300	700	16,000
San Benito	1,100		75			125	2,600
San Bernardino	300			200	175	550	30,000
San Diego							4,500
San Francisco							
San Joaquin	18,000	800	750	1,000	1,000	3,500	70,000
San Luis Obispo	10	25	20			2,680	32,000
San Mateo	175	300	125				300
Santa Barbara		60		20		13,000	4,500
Santa Clara	7,300	712	512			6,890	5,945
Santa Cruz		460	240			420	50
Shasta	75	115	10		10	50	12,500
Sierra							700
Siskiyou							28,000
Solano	2,200						
Sonoma	120	210	1,030				560
Stanislaus				1,550	2,175		51,347
Sutter							4,714
Tehama	110	45					4,445
Trinity							2,500
Tulare	100	150	150	350	500		150,000
Tuloumne	12	20	20				300
Ventura						8,648	830
Yolo						6,800	42,100
Yuba						500	1,803

SCHEDULE J.

STEAM RAILROADS.

State Taxes Levied Against Steam Railroads for the Year 1923.

Name of company	Assessment	Tax
Albion Lumber Company	$50,705 67	$3,549 40
Amador Central Railroad Company	76,069 40	5,327 86
Arcata and Mad River Railroad Company	122,480 02	8,573 60
Atchison, Topeka and Santa Fe Railway Company	31,029,030 55	2,172,032 14
Bay Point and Clayton Railroad Company	34,257 17	2,398 00
Bucksport and Elk River Railroad Company	18,797 56	1,315 82
California Central Railroad Company	53,120 83	3,718 46
California Shasta and Eastern Railroad Company	4,000 00	280 00
California Western Railroad and Navigation Company	301,684 01	21,117 88
Camino, Placerville and Lake Tahoe Railroad Company	24,320 91	1,702 46
Cement, Tolenas and Tidewater Railroad Company	104,050 13	7,283 50
Coal Fields Railway	10,003 28	700 22
Death Valley Railroad Company	73,990 04	5,179 30
Diamond and Caldor Railway Company	83,926 85	5,874 88
Holton Interurban Railway Company	73,088 40	5,116 18
Howard Terminal Railway	21,008 12	1,470 56
Humboldt Northern Railway Company	75,863 16	5,310 42
Indian Valley Railroad Company	124,553 80	8,718 76
Iron Mountain Railway Company	13,705 85	959 40
Kings Lake Shore Railroad Company	11,528 35	806 98
Lake Tahoe Railway and Transportation Company	37,717 31	2,640 20
Los Angeles and Salt Lake Railroad Company	7,440,408 49	520,828 60
McCloud River Railroad Company	531,083 10	37,175 82
Modesto and Empire Traction Company	92,568 55	6,479 80
Mojave Northern Railroad Company	52,479 60	3,673 56
Mt. Tamalpais and Muir Woods Railway	103,126 27	7,218 84
Nevada-California-Oregon Railway Company	366,751 76	25,672 62
Nevada County Narrow Gauge Railroad Company	134,886 95	9,442 08
Northwestern Pacific Railroad Company	7,581,185 10	530,682 96
Pacific Coast Railway Company	249,646 23	17,437 84
Pajaro Valley Consolidated Railroad Company	55,505 03	3,885 34
Quincy Railroad Company	20,841 94	1,458 94
Sacramento Valley and Eastern Railway Company	44,857 44	3,140 02
San Diego and Arizona Railway Company	1,131,417 44	79,199 22
San Joaquin and Eastern Railroad Company	197,140 06	13,799 80
Santa Maria Valley Railroad Company	72,534 32	5,077 40
Sierra Railway Company of California	1,273,381 27	89,136 68
Southern Pacific Company	109,985,710 41	7,698,999 72
South San Francisco Belt Railway	43,352 62	3,034 68
Stockton Terminal and Eastern Railroad Company	22,443 35	1,571 02
Sugar Pine Railway Company	6,000 00	420 00
Sunset Railway Company	790,050 85	55,303 56
Tonopah and Tidewater Railroad Company	417,067 90	29,194 74
Trona Railway Company	94,180 53	6,592 64
Ventura County Railway Company	23,059 83	1,614 18
Western Pacific Railroad Company	5,723,320 70	400,632 44
Yosemite Valley Railroad Company	682,797 65	47,795 84
Yreka Railroad Company	21,912 51	1,533 88

STEAM RAILROADS.

State Taxes Levied Against Steam Railroads for the Year 1924.

Name of company	Assessment	Tax
Albion Lumber Company	$57,224 45	$4,005 70
Amador Central Railroad Company	61,678 07	4,317 46
Arcata and Mad River Railroad Company	131,268 11	9,188 76
Atchison, Topeka and Santa Fe Railway Company	34,787,879 07	2,435,151 52
Bay Point and Clayton Railroad Company	45,772 88	3,204 10
Bucksport and Elk River Railroad Company	17,386 61	1,217 06
California Central Railroad Company	60,919 31	4,264 34
California Shasta and Eastern Railroad Company	5,354 99	374 84
California Western Railroad and Navigation Company	306,929 01	21,485 02
Camino, Placerville and Lake Tahoe Railroad Company	35,717 61	2,500 22
Cement, Tolenas and Tidewater Railroad Company	116,348 14	8,144 36
Death Valley Railroad Company	112,743 82	7,892 06
Diamond and Caldor Railway Company	61,344 90	4,294 14
Holton Interurban Railway Company	90,825 06	6,357 74
Howard Terminal Railway Company	26,181 25	1,832 68
Humboldt Northern Railway Company	97,896 38	6,852 74
Indian Valley Railroad Company	121,178 77	8,482 50
Iron Mountain Railway Company	4,873 61	341 14
Kings Lake Shore Railroad Company	3,000 00	210 00
Lake Tahoe Railroad and Transportation Company	36,546 80	2,558 28
Los Angeles and Salt Lake Railroad Company	9,689,057 57	678,234 02
McCloud River Railroad Company	571,343 30	39,994 02
Minarets and Western Railway Company	282,477 84	19,773 44
Modesto and Empire Traction Company	98,274 18	6,879 18
Mojave Northern Railroad Company	66,570 80	4,659 94
Mt. Tamalpais and Muir Woods Railway	95,910 49	6,713 72
Nevada-California-Oregon Railway Company	315,454 55	22,081 82
Nevada County Narrow Gauge Railroad Company	110,408 61	7,728 60
Northwestern Pacific Railroad Company	7,717,089 48	540,196 26
Pacific Coast Railway Company	162,567 79	11,379 74

SCHEDULE J—Concluded.

Name of company	Assessment	Tax
Pajaro Valley Consolidated Railroad Company	$56,365 62	$3,945 58
Quincy Railroad Company	27,123 02	1,898 60
Sacramento Valley and Eastern Railway	9,483 22	663 82
San Diego and Arizona Railway Company	1,153,220 82	80,725 46
San Joaquin and Eastern Railroad Company	191,349 36	13,394 46
Santa Maria Valley Railroad Company	73,077 49	5,115 42
Sierra Railway Company of California	697,472 21	48,823 04
Southern Pacific Company	120,986,666 00	8,469,066 62
South San Francisco Belt Railway	48,881 00	3,421 67
Stockton Terminal and Eastern Railroad	18,029 42	1,262 06
Sunset Railway Company	614,908 26	43,043 58
Tonopah and Tidewater Railroad Company	516,133 57	36,129 34
Trona Railway Company	146,078 62	10,225 50
Ventura County Railway Company	19,666 70	1,376 66
Western Pacific Railroad Company	6,437,615 01	450,633 04
Yosemite Valley Railroad Company	689,136 69	48,239 56
Yreka Railroad Company	22,333 91	1,563 36

ELECTRIC RAILROADS.

State Taxes Levied Against Electric Railroads, Including Street Railways, for the Year 1923.

Name of company	Assessment	Tax
Angels Flight Railway Company	$36,060 94	$1,893 20
Bakersfield and Kern Electric Railway Company	123,452 83	6,481 28
Bay Shore Railroad Company	1,037 80	54 48
California Street Cable Railroad Company	546,275 10	28,679 44
Central California Traction Company	568,759 78	29,859 88
Chowchilla Pacific Railway Company	768 04	40 32
Court Flight Incline Railroad Company	2,044 00	107 30
Fairfax Incline Railroad Company	2,503 80	131 44
Fresno Interurban Railway Company	50,446 14	2,648 42
Fresno Traction Company	428,386 19	22,490 28
Glendale and Montrose Railway Company	40,205 79	2,110 80
Los Angeles Railway Corporation	11,051,776 24	580,218 24
Market Street Railway Company	9,645,470 89	506,387 22
Monterey and Pacific Grove Railway Company	25,114 85	1,318 52
Nevada County Traction Company	29,107 67	1,528 14
Pacific Electric Railway Company	17,893,416 42	939,404 36
Pacific Gas and Electric Company	798,430 21	41,917 58
Peninsular Railway Company	307,415 73	16,139 32
Petaluma and Santa Rosa Railroad Company	318,849 84	16,739 62
Sacramento Northern Railroad	1,586,366 50	83,284 24
San Diego Electric Railway Company	1,379,490 23	72,423 24
San Francisco, Napa and Calistoga Railway Company	302,565 20	15,884 68
San Francisco-Oakland Terminal Railways	7,250,190 69	380,635 00
San Francisco-Sacramento Railroad Company	1,097,238 10	57,605 00
San Jose Railroads	425,302 76	22,328 40
Southern California Edison Company	131,993 89	6,929 68
Stockton Electric Railroad Company	338,164 11	17,753 60
Tidewater Southern Railway Company	217,731 45	11,430 90
Union Traction Company	83,992 93	4,409 62
Visalia Electric Railroad Company	126,559 14	6,644 34

ELECTRIC RAILROADS.

State Taxes Levied Against Electric Railroads, Including Street Railways, for the Year 1924.

Name of company	Assessment	Tax
Angels Flight Railway Company	$39,779 94	$2,088 44
Bakersfield and Kern Electric Company	104,689 41	5,496 18
Bay Shore Railroad Company	963 40	50 58
California Street Railroad Company	559,341 65	29,365 44
Central California Traction Company	608,493 96	31,945 92
Chowchilla Pacific Railway Company	1,069 56	56 14
Court Flight Incline Railroad Company	2,404 00	126 20
Fairfax Incline Railroad Company	3,000 00	157 50
Fresno Interurban Railway Company	72,229 53	3,792 04
Fresno Traction Company	430,365 26	22,594 16
Glendale and Montrose Railway Company	50,826 72	2,668 40
Key System Transit Company	7,676,372 73	403,009 56
Los Angeles Railway Corporation	12,645,435 94	663,885 38
Market Street Railway Company	9,884,393 07	518,930 64
Pacific Electric Railway Company	21,504,179 58	1,128,969 42
Pacific Gas and Electric Company	783,074 79	41,111 42
Peninsula Railway Company	293,704 77	15,419 50
Petaluma and Santa Rosa Railroad Company	358,387 42	18,815 34
Sacramento Northern Railroad	1,534,510 58	80,561 80
San Diego Electric Railway Company	1,372,496 21	72,056 04
San Francisco, Napa and Calistoga Railway	312,681 03	16,415 74
San Francisco-Sacramento Railroad Company	1,025,138 42	53,819 76
San Jose Railroads	415,035 32	21,789 34
Southern California Edison Company	144,815 25	7,602 80
Stockton Electric Railroad Company	331,284 38	17,392 42
Tidewater Southern Railway Company	236,040 57	12,392 12
Union Traction Company	73,058 93	3,835 58
Visalia Electric Railroad Company	206,126 91	10,821 66

SCHEDULE K.

GAS AND ELECTRIC COMPANIES.

State Taxes Levied Against Gas and Electric Companies for the Year 1923.

Name of company	Assessment	Tax
Alaska Commercial Building	$15,705 04	$1,177 88
Alturas Electric Power Company	20,422 54	1,531 68
Amador Electric Light and Power Company	47,521 01	3,564 08
Angels Electric Light and Power Company	91,758 28	6,881 86
A. Sorensen	2,838 94	212 92
Bay Point Light and Power Company	20,424 08	1,531 80
Bear Valley Utility Company	6,883 88	516 28
Bell Electric Company	38,401 57	2,880 12
California-Oregon Power Company	475,560 87	35,667 06
California Telephone and Light Company	261,236 17	19,592 70
Capitola Company	3,802 35	285 18
Central Counties Gas Company	201,125 30	15,084 40
Central Natural Gas Company	9,114 13	683 56
Chalfant Co-operative Power Company	715 47	53 66
C. J. York	1,842 75	138 20
Coast Counties Gas and Electric Company	808,834 27	60,662 56
Coast Valleys Gas and Electric Company	625,537 07	46,915 28
Contra Costa Gas Company	123,223 13	9,241 72
Diamond Match Company, The	1,610 16	120 76
Fair Oaks Electric Company, R. A. Rose	2,335 42	175 16
Fair Oaks Electric Company	4,612 96	345 96
Fontana Power Company	81,916 20	6,143 72
Fort Bragg Electric Company	46,134 79	3,460 10
Fowler Gas Company	7,927 75	594 58
Great Western Power Company of California	7,597,718 18	569,828 86
Grizzly Electric Company	5,588 85	419 16
Hanford Gas and Power Company	56,958 83	4,271 90
Holton Power Company	530,925 90	39,819 44
Indian Valley Light and Power Company	2,902 00	217 64
J. G. Peters	2,364 99	177 36
J. M. Hotchkiss Electric Light Plant	15,029 68	1,127 22
Lake County Power and Irrigation Company	1,749 08	131 18
Lassen Electric Company	47,018 01	3,526 34
Lompoc Light and Power Company	25,329 04	1,899 68
Los Angeles Gas and Electric Corporation	11,521,708 37	864,128 12
Madera Gas Company	33,679 17	2,525 94
Mendocino Electric Light and Power Company	9,485 80	711 44
Middle Yuba Hydro-Electric Power Company	49,912 24	3,743 42
Midway Gas Company	2,665,618 64	199,921 40
Modesto Gas Company	144,109 40	10,808 20
Napa Valley Electric Company	54,981 97	4,123 64
Needles Gas and Electric Company	66,627 84	4,997 08
Nestles Food Company	14,749 73	1,106 22
Nevada-California Power Company	64,096 50	4,807 24
Novato Utilities Company	10,462 51	784 68
N. P. Jensen	420 32	31 52
Oakdale Gas Company	20,764 17	1,557 30
Ojai Power Company	29,719 01	2,228 92
Ontario Power Company	260,550 24	19,541 26
Pacific Gas and Electric Company	36,606,445 54	2,745,483 42
Pinole Light and Power Company	14,282 65	1,071 29
Point Arena Electric Light Company	1,661 45	124 60
Producers Gas and Fuel Company	85,552 56	6,416 44
Quincy Electric Light and Power Company	10,849 99	813 74
Riverbend Gas and Water Company	119,605 10	8,970 38
Sacramento Gas Company	243,295 16	18,247 14
San Diego Consolidated Gas and Electric Company	3,765,578 62	282,418 40
San Joaquin Light and Power Corporation	6,629,443 13	497,208 22
Santa Cruz County Utilities	6,858 40	514 38
Santa Maria Gas Company	245,483 58	18,411 26
S. H. McKinley	1,415 96	106 20
Sierra City Electric Light Plant	278 00	20 84
Snow Mountain Water and Power Company	254,114 38	19,058 58
Southern California Edison Company	15,738,594 77	1,180,394 60
Southern California Gas Company	5,679,019 96	425,926 50
Southern Counties Gas Company of California	5,387,050 34	404,028 78
Southern Sierras Power Company	1,480,465 99	111,034 94
Southwestern Gas Company	10,146 24	760 96
Standard Mining Property	240 18	18 00
Surprise Valley Electric Light and Power Company	5,569 98	417 74
Tomales Mutual Electric Company	830 02	62 24
Trinity County Water and Power Company	1,181 25	88 58
Truckee Electric Light and Power Company	8,791 44	659 36
Truckee River Power Company	11,816 09	886 20
Tuolumne County Electric Power and Light Company	35,736 39	2,680 22
Turlock Gas Company	47,950 96	3,596 32
Twin Cities Gas Company	18,695 13	1,402 12
Vacaville Water and Power Company	28,867 96	2,165 10
Vallejo Electric Light and Power Company	201,647 06	15,123 52
Weaverville Electric Company	4,788 25	359 12
Western States Gas and Electric Company	2,660,391 70	199,529 38
West Side Lumber Company	10,558 15	791 86
West Side Natural Gas Company	140,873 59	10,565 52
Willits Water and Power Company	21,792 23	1,634 42
Yuma Light, Gas and Water Company	5,232 20	392 42

SCHEDULE K—Concluded.

GAS AND ELECTRIC COMPANIES.

State Taxes Levied Against Gas and Electric Companies for the Year 1924.

Name of company	Assessment	Tax
Alaska Commercial Building	$8,984 03	$673 80
Alturas Electric Power Company	21,124 62	1,584 34
Amador Electric Light and Power Company	44,640 28	3,348 02
Angels Electric Light and Power Company	77,946 12	5,845 96
A. Sorensen	3,195 73	239 68
Bay Point Light and Power Company	17,647 87	1,323 58
Bear Valley Utility Company	7,500 00	562 50
Bell Electric Company	38,120 91	2,859 07
California Oregon Power Company	536,321 37	40,224 10
California Telephone and Light Company	284,688 55	21,351 64
Capitola Company	3,887 83	291 58
Central Counties Gas Company	218,778 81	16,408 40
Central Mendocino County Power Company	23,481 23	1,761 08
Central Natural Gas Company	8,409 33	630 70
Chalfant Co-operative Power Association	4,689 78	351 72
C. J. York	1,913 75	143 52
Coast Counties Gas and Electric Company	996,181 46	74,713 60
Coast Valleys Gas and Electric Company	744,679 63	55,850 96
Contra Costa Gas Company	53,881 46	4,041 10
Diamond Match Company, The	1,915 93	143 68
Fair Oaks Electric Company	7,635 56	572 66
Fontana Power Company	62,202 41	4,665 18
Fort Bragg Electric Company	42,621 19	3,196 58
Fowler Gas Company	7,688 49	576 64
Great Western Power Company	7,325,031 24	549,377 34
Grizzly Electric Company	957 40	71 80
Hanford Gas and Power Company	56,999 54	4,274 96
Indian Valley Light and Power Company	4,490 54	336 78
J. M. Hotchkiss Electric Light Plant	21,804 92	1,635 36
Lake County Power and Irrigation Company	1,901 04	142 58
Lassen Electric Company	52,436.21	3,932 72
Los Angeles Gas and Electric Corporation	12,364,569 29	927,342 70
Madera Gas Company	35,577 72	2,668 32
Melones Mining Company	32,483 93	2,436 28
Mendocino Electric Light and Power Company	10,808 08	810 60
Middle Yuba Hydro-Electric Power Company	51,474 32	3,860 56
Midway Gas Company	3,337,484 19	250,311 30
Modesto Gas Company	157,567 03	11,817 52
Napa Valley Electric Company	56,817 50	4,261 30
Needles Gas and Electric Company	71,721 93	5,379 14
Nestles' Food Company	16,803 85	1,260 28
Nevada-California Power Company	60,166 12	4,512 46
Novato Utilities Company	12,415 86	931 18
N. P. Jensen	231 10	17 32
Oakdale Gas Company	21,100 85	1,582 56
Ojai Power Company	37,829 08	2,837 18
Ontario Power Company	342,849 64	25,713 72
Pacific Gas and Electric Company	36,850,700 05	2,763,802 50
Peters Bros.	2,659 60	199 46
Pinole Light and Power Company	15,379 03	1,153 42
Producers Gas and Fuel Company	56,256 18	4,219 20
Quincy Electric Light and Power Company	16,432 59	1,232 44
Riverbend Gas and Water Company	109,720 51	8,229 04
Sacramento Gas Company	235,236 56	17,642 74
San Diego Consolidated Gas and Electric Company	3,802,599 08	285,194 92
San Joaquin Light and Power Corporation	7,204,801 96	540,360 14
Santa Cruz County Utilities	9,281 99	696 14
Santa Maria Gas Company	269,438 25	20,207 86
S. H. McKinley	1,537 79	115 32
Sierra City Electric Light Plant	375 00	28 12
Snow Mountain Water and Power Company	236,344 28	17,725 82
Southern California Edison Company	19,669,081 92	1,475,181 14
Southern California Gas Company	7,257,168 40	544,287 62
Southern Counties Gas Company of California	5,804,870 29	435,365 26
Southern Sierras Power Company	2,360,369 90	177,027 74
Southwestern Gas Company	10,486 97	786 52
Standard Mining Property	252 52	18 94
Surprise Valley Electric Light and Power Company	6,000 00	450 00
Tomales Mutual Electric Company	800 00	60 00
Truckee Electric Light and Power Company	9,170 80	687 80
Truckee River Power Company	15,261 74	1,144 62
Tuolumne County Electric Power and Light Company	41,695 60	3,127 16
Turlock Gas Company	47,029 18	3,527 18
Twin Cities Gas Company	18,284 80	1,371 36
Vacaville Water and Power Company	28,598 03	2,144 84
Vallejo Electric Light and Power Company	196,216 33	14,716 22
Weaverville Electric Company	5,500 00	412 50
Western States Gas and Electric Company	2,940,844 96	220,563 36
West Side Lumber Company	11,577 81	868 34
West Side Natural Gas Company	119,286 93	8,946 52
Yuma Light, Gas and Water Company	7,098 93	532 42

SCHEDULE L.

TELEGRAPH AND TELEPHONE COMPANIES.

State Taxes Levied Against Telegraph and Telephone Companies for the Year 1923.

Name of company	Assessment	Tax
Adelaide Rural Telephone Company	$575 21	$31 64
Alpaugh Telephone and Telegraph Company	750 00	41 25
Arizona-California-Nevada Telephone Company	167 02	9 18
Associated Telephone Company	449,581 81	24,727 00
Auburn Telephone Line	432 00	23 76
A. W. Poe	291 00	16 00
Baird Telephone Company	150 48	8 28
Bass Telephone Line	4,173 26	229 52
Bear Creek and Anderson Telephone Line	349 20	19 20
Bridgeport Telephone and Telegraph Company	322 00	17 70
Butte Meadows Telephone Company, J. W. Roper	222 15	12 22
Butte Valley Telephone Company	797 15	43 84
Calaveras Telephone Company	1,832 07	100 76
California Telephone and Light Company	86,484 66	4,756 66
Cambria Telephone Company	1,425 00	78 38
Campbell Telephone Company	1,911 00	105 10
Canby Alturas Telephone Company	142 35	7 82
Cayay Valley Telephone Line	780 00	42 90
Chetco Southern Telephone Company	1,587 26	87 30
Chileno Valley Telephone Company	410 62	22 58
Coachella Valley Home Telephone and Telegraph Company	7,381 62	405 98
Colfax Telephone Exchange	3,974 76	218 60
Colorado River Telephone Company	7,295 86	401 26
Colusa County Telephone Company	47,412 31	2,607 68
Consolidated Utilities Company	32,908 84	1,809 98
Corcoran Telephone Exchange	5,373 38	295 54
Corona Home Telephone and Telegraph Company	21,283 33	1,170 58
Del Norte Peoples Telephone Company	7,000 00	385 00
Delta Telephone and Telegraph Company	43,164 20	2,374 02
Dos Palos Telephone Company	5,610 04	308 54
Downey Home Telephone and Telegraph Company	26,114 77	1,436 30
Dry Creek and Healdsburg Telephone Company	518 97	28 54
Ducor-California Hot Springs Telephone and Telegraph Company	2,173 63	119 54
Earl B. Stephens	85 25	4 68
Eel River and Southern Telephone Company	11,637 87	640 08
Elk Grove Mutual Telephone Association	1,359 96	74 80
Evans Telephone Company	8,041 21	442 26
Exeter Telephone and Telegraph Company	7,088 87	389 88
Farmers Mutual Telephone Association	1,480 00	81 40
Farmers Union Telephone Line	1,192 00	65 56
Federal Telegraph Company	310,355 12	17,069 52
Foresthill Telephone Exchange	920 38	50 62
Fowler Independent Telephone Company	13,582 25	747 02
G. F. Green	6,694 65	368 20
Gilroy Telephone Company	17,132 93	942 30
Guglielmetti Telephone Company	2,547 16	140 08
G. W. Bandy	1,084 59	59 64
Happy Valley Telephone Company	952 67	52 40
Healdsburg and Alexander Valley Telephone Company	659 00	36 24
H. E. Bigelow Telephone Company	5,508 32	302 96
Home Telephone and Telegraph Company of Pasadena	617,776 81	33,977 72
Home Telephone Company of Colusa	127 56	7 02
Home Telephone Company of Covina	66,166 41	3,639 14
Home Telephone Company of Etiwanda	1,172 60	64 48
Honey Lake Valley Mutual Telephone Association	5,558 46	305 72
Huntington Beach Telephone Company	21,433 83	1,178 86
Interstate Telegraph Company	62,163 77	3,419 00
Ione Valley Telephone Line	108 00	5 94
James Snell Telephone Line	43 00	2 48
Keeler-Darwin Telephone Line	767 81	42 22
Kerman Telephone Company	7,372 45	405 48
Kern Mutual Telephone Company	117,989 90	6,489 44
Kingsburg Telephone Company	2,619 97	144 10
Klamath Telephone and Telegraph Company	830 88	45 70
Knights Landing Telephone Exchange	1,851 64	101 84
Lake County Telephone Association	1,832 31	100 78
Lakeville Telephone Company	408 00	22 44
Lemon Cove Telephone Exchange	949 50	52 22
Lily Berg Telephone Line	295 47	16 24
Lindsay Home Telephone and Telegraph Company	17,954 66	987 50
Little Shasta Telephone Company	130 50	7 18
Livingston Telephone Company	4,611 37	253 62

SCHEDULE L—Continued.

TELEGRAPH AND TELEPHONE COMPANIES.

State Taxes Levied Against Telegraph and Telephone Companies, for the Year 1923.

Name of company	Assessment	Tax
Lorain Telephone Line	$250 00	$13 75
Los Gatos Telephone Company	30,301 36	1,666 56
Macdoel Telephone Company	361 35	19 86
Magnolia Farmers Telephone Company	1,300 23	71 50
Manteca Telephone and Telegraph Company	16,108 03	885 94
Mariposa Telephone Exchange	205 00	11 28
McCloud Telephone Exchange	1,051 09	57 80
McFarlan Telephone Company	2,927 00	160 98
Melburne Telephone Company	45 00	2 48
Merquin Telephone Company	780 00	42 90
Monrovia Telephone and Telegraph Company	34,222 84	1,882 26
Morgan Hill Telephone Company	3,386 83	186 28
Mt. Diablo Telephone Company	380 00	20 90
Mrs. Frank Olcese	243 19	13 38
Needles Gas and Electric Company	9,225 77	507 42
Nevada-California and Oregon Telephone and Telegraph Company	39,879 30	2,193 36
Northern Trinity Telephone and Telegraph Company	487 33	26 80
Novato Utilities Company	4,184 80	230 16
Ontario and Upland Telephone Company	83,211 78	4,576 64
Owens Lake Telephone Company	36 00	1 98
Oxnard Home Telephone Company	40,666 82	2,236 68
Pacific Telephone and Telegraph Company	24,850,287 51	1,366,765 80
Paso Robles and Shandon Telephone Company	2,743 53	150 88
Petaluma Rural Telephone Company	1,876 80	103 22
Petrolia Telephone Company	558 20	30 70
Pine Knot Company	2,592 79	142 60
Placerville Telephone and Telegraph Company	3,927 25	215 98
Pomona Valley Telephone and Telegraph Union	125,074 54	6,879 10
Postal Telegraph Cable Company	304,818 97	16,765 04
Radio Corporation of America	10,614 97	583 82
Raymond Telephone Company	4,853 07	266 92
Red Hill Telephone Company	251 44	13 82
Redondo Home Telephone Company	37,750 54	2,076 22
Reedley Telephone Company	21,580 56	1,186 98
Rindge Land and Navigation Company	1,000 26	55 02
Rio Vista Telephone and Telegraph Company	10,250 28	563 76
Robert L. Swanson Telephone System	525 97	28 92
Roseville Telephone Company	18,114 48	996 30
R. S. Sorensen	1,632 23	89 77
Sacramento Valley Telephone Company	106,011 58	5,830 64
San Antonio Home Telephone Company	1,260 60	69 32
San Fernando Telephone and Telegraph Company	22,416 54	1,176 86
Sanger Telephone Company	15,126 91	831 98
San Joaquin Valley Telephone Company	1,182 21	65 02
San Luis Rey Co-operative Telephone Company	93 00	5 12
San Miguel Interurban Telephone Company	1,872 33	102 98
Santa Barbara Telephone Company	331,913 59	18,255 24
Santa Monica Bay Home Telephone Company	174,352 06	9,589 36
Santa Paula Home Telephone Company	29,323 32	1,612 78
Shenandoah Valley Telephone Company	240 00	13 20
Sierra Madre Telephone and Telegraph Company	16,745 60	921 00
Siskiyou Telephone Company	12,163 92	669 02
Smeltzer Home Telephone and Telegraph Company	6,046 17	332 54
Southern California Telephone Company	8,732,368 22	480,280 24
Southwestern Home Telephone Company	123,545 30	6,794 98
Suisun and Green Valley Telephone Company	1,680 80	92 44
Sunland Rural Telephone Company	6,407 99	352 44
Tognini and Ghezzi Telephone Company	2,029 77	111 64
Tulare Home Telephone and Telegraph Company	35,000 00	1,375 00
Tuolumne Telephone Exchange	2,376 74	130 72
Turlock Home Telephone and Telegraph Company	32,855 18	1,807 02
United Farmers Telephone and Telegraph Company	79 08	4 34
United States Long Distance Telephone and Telegraph Company	688,746 81	37,881 06
Upper Dry Creek Telephone Company	394 50	21 70
Valley Telephone Company	5,914 67	325 30
Volcano Telephone and Telegraph System	1,978 96	108 84
Weaverville Supply Company	243 79	13 40
Weaverville Telephone Exchange	800 00	44 00
Western Union Telegraph Company	1,920,363 08	105,619 96
West Side Telephone Company of Healdsburg	500 00	27 50
Whittier Home Telephone and Telegraph Company	95,309 24	5,242 00
Willits Telephone and Telegraph Company	4,318 81	237 52

SCHEDULE L—Continued.

TELEGRAPH AND TELEPHONE COMPANIES.

State Taxes Levied Against Telegraph and Telephone Companies, for the Year 1924.

Name of company	Assessment	Tax
Adelaide Rural Telephone Company	$434 81	$23 90
Alpaugh Telephone and Telegraph Company	750 00	41 26
Arizona, California and Nevada Telephone Company	137 44	7 56
Associated Telephone Company	551,836 48	30,351 00
A. W. Poe	237 00	13 04
Baird Telephone Company	119 00	6 54
Bass Telephone Line	4,019 63	221 08
Bear Creek and Anderson Telephone Line	455 00	25 02
Bridgeport Telephone and Telegraph Company	300 00	16 50
Butte Meadows Telephone Company or J. W. Roper	116 60	6 40
Butte Valley Telephone Company	754 08	41 46
Calaveras Telephone Company	2,014 99	110 82
California Telephone and Light Company	92,420 59	5,083 12
Campbell Telephone Company	2,180 00	119 90
Canby Alturas Telephone Company	26 35	1 44
Cayey Valley Telephone Line	780 00	42 90
Chetco Southern Telephone Company	1,392 43	76 58
Chileno Valley Telephone Company	549 13	30 20
Coachella Valley Home Telephone and Telegraph Company	8,117 36	446 44
Coast Telephone Company	3,407 57	187 42
Colfax Telephone Exchange	4,236 70	233 02
Colorado River Telephone Company	10,675 73	587 16
Colusa County Telephone Company	47,952 67	2,637 40
Consolidated Utilities Company	42,370 31	2,350 16
Corcoran Telephone Exchange	5,742 09	315 80
Corona Home Telephone and Telegraph Company	21,834 97	1,200 92
Del Norte Peoples Telephone Company	8,499 04	467 44
Delta Telephone and Telegraph Company	47,503 08	2,612 66
Dos Palos Telephone Company	5,734 40	315 94
Downey Home Telephone and Telegraph Company	30,948 98	1,702 18
Dry Creek and Healdsburg Telephone Company	474 54	26 10
Ducor-California Hot Springs Telephone and Telegraph Company	2,264 85	124 56
Eel River and Southern Telephone Company	11,682 69	642 54
Elk Grove Mutual Telephone Company	7,521 96	413 70
Evans Telephone Company, The	9,369 25	515 30
Exeter Telephone and Telegraph Company	13,271 12	729 90
Farmers Union Telephone Line	1,270 00	69 84
Federal Telegraph Company	369,140 78	20,302 74
Foresthill Telephone Exchange	1,027 03	56 48
Fowler Independent Telephone Company	13,362 81	734 94
G. F. Green	6,157 20	338 64
Gilroy Telephone Company	18,761 44	1,031 88
Guglielmetti Rural Telephone Company	2,721 55	149 68
G. W. Bandy	722 74	39 74
Happy Valley Telephone Company	909 63	50 02
Harris Rural Telephone Company	227 00	12 48
Healdsburg and Alexander Valley Telephone Company	919 75	50 58
H. E. Bigelow Telephone Company	5,756 07	316 58
Home Telephone and Telegraph of Pasadena	724,371 80	39,840 44
Home Telephone Company of Colusa	27 44	1 50
Home Telephone Company of Covina	70,530 94	3,879 20
Home Telephone Company of Etiwanda	1,169 13	64 30
Honey Lake Valley Mutual Telephone Association	5,255 98	289 08
Huntington Beach Telephone Company	25,226 89	1,387 48
Interestate Telegraph Company	66,140 95	3,637 74
Ione Valley Telephone Line	108 00	5 94
James Ranch Mutual Telephone Company	1,157 38	63 66
James Snell Telephone Line	50 00	2 76
Keeler Darwin Telephone Line	622 49	34 24
Kerman Telephone Company	8,277 47	455 26
Kern Mutual Telephone Company	111,720 07	6,144 60
Kingsburg Telephone Company	2,375 00	130 62
Klamath Telephone and Telegraph Company	758 29	41 70
Knights Landing Telephone Exchange	1,965 19	108 08
Lake County Telephone Association	1,190 00	65 44
Lemon Cove Telephone Exchange	927 73	51 58
Lily Berg Telephone Line	781 40	42 98
Lindsay Home Telephone and Telegraph Company	18,873 46	1,038 04

SCHEDULE L—Concluded.

TELEGRAPH AND TELEPHONE COMPANIES.

State Taxes Levied Against Telegraph and Telephone Companies, for the Year 1924.

Name of company	Assessment	Tax
Little Shasta Telephone Company	$135 00	$7 42
Livingston Telephone Company	5,796 40	318 80
Los Gatos Telephone Company	33,002 21	1,815 12
Macdoel Telephone Company	337 95	18 58
Magnolia Farmers Telephone Company	1,714 24	94 28
Manteca Telephone Company	16,500 90	907 54
McCloud Telephone Exchange	1,081 43	59 48
McFarland Telephone Company	2,970 00	163 34
Melburne Telephone Company	37 50	2 06
Merquin Telephone Company	960 00	52 80
Monrovia Telephone and Telegraph Company	38,535 26	2,119 44
Morgan Hill Telephone Company	4,103 78	225 70
Mt. Diablo Telephone Company	190 00	10 44
Mrs. Frank Olcese	317 32	17 44
Needles Gas and Electric Company	9,454 09	519 96
Nevada, California and Oregon Telephone and Telegraph Company	40,971 51	2,253 42
Northern Trinity Telephone and Telegraph Company	472 84	26 00
Novato Utilities Company	4,420 17	243 10
Ontario and Upland Telephone Company	91,303 92	5,021 72
Owens Lake Telephone Company	100 00	5 50
Oxnard Home Telephone Company	44,094 18	2,425 18
Pacific Telephone and Telegraph Company	27,390,383 88	1,506,471 10
Paso Robles and Shandon Telephone Company	2,468 55	135 76
Petrolia Telephone Company	699 41	38 46
Pine Knot Telephone Line	1,490 10	81 96
Pomona Valley Telephone and Telegraph Union	127,997 63	7,039 86
Postal Telegraph Cable Company	342,589 83	18,842 44
Radio Corporation of America	11,378 61	625 82
Raymond Telephone Company	6,733 06	370 32
Red Hill Telephone Company	264 50	14 54
Redondo Home Telephone Company	46,261 06	2,544 36
Reedley Telephone Company	21,277 32	1,170 24
Rindge Land and Navigation Company	985 98	54 22
Rio Vista Telephone and Telegraph Company	10,306 69	566 86
Robert L. Swanson Telephone Company	770 43	42 36
Roseville Telephone Company	21,565 90	1,186 12
R. S. Sorensen	1,674 11	92 08
Sacramento Valley Telephone Company	105,287 18	5,790 78
San Antonio Home Telephone Company	1,436 00	78 98
San Fernando Telephone and Telegraph Company	26,974 70	1,483 60
Sanger Telephone Company	16,659 64	916 28
San Miguel Interurban Telephone Company	1,519 93	83 69
Santa Barbara Telephone Company	356,021 46	19,581 18
Santa Monica Bay Home Telephone Company	209,107 80	11,500 92
Santa Paula Home Telephone Company	35,641 56	1,960 28
Sierra Madre Telephone and Telegraph Company	18,167 54	999 20
Siskiyou Telephone Company	12,820 18	705 10
Smeltzer Home Telephone Company	4,951 71	272 34
Southern California Telephone Company	10,427,902 36	573,534 62
Southwestern Home Telephone Company	132,636 11	7,294 98
Suisun and Green Valley Telephone Company	3,172 99	174 99
Sunland Rural Telephone Company	6,987 12	384 28
Tognini and Ghezzi Telephone Company	612 68	33 70
Tuolumne Telephone Exchange	3,107 02	170 88
Turlock Home Telephone and Telegraph Company	34,519 02	1,898 54
United Farmers' Telephone and Telegraph Company, The	95 61	5 26
United States Long Distance Telephone and Telegraph Company	881,993 27	48,509 62
Upper Dry Creek Telephone Company	399 75	21 98
Valley Telephone Company	6,129 04	337 10
Volcano Telephone and Telegraph System	1,831 40	100 72
Weaverville Supply Company	238 53	13 12
Weaverville Telephone Exchange	960 00	52 80
Western Union Telegraph Company	2,079,988 99	114,399 38
West Side Telephone Company of Healdsburg	756 00	41 58
Whittier Home Telephone and Telegraph Company	107,632 38	5,919 78
Willits Telephone and Telegraph Company	4,618 14	254 00

SCHEDULE M.

CAR COMPANIES.

State Taxes Levied Against Car Companies, for the Year 1923.

Name of company	Assessment	Tax
American Refrigerator Transit Company	$2,819 94	$148 04
California Dispatch Line	10,554 00	554 08
Live Poultry Transit Company	4,405 34	231 28
Pacific Fruit Express Company	1,942,496 41	101,981 06
Pullman Company, The	2,817,622 20	147,925 16
Semet Solvay Company	27 36	1 44
Standard Tank Car Company	5,996 49	314 82
Swift Refrigerator Transportation Company	3,419 84	179 54
Union Refrigerator Transit Company	3,905 14	205 02
Union Tank Car Company	87,082 09	4,571 80

State Taxes Levied Against Car Companies, for the Year 1924.

Name of company	Assessment	Tax
American Refrigerator Transit Company	$9,832 06	$516 18
California Dispatch Line	23,180 00	1,216 94
Interestate Tank Car Corporation	7 59	40
Live Poultry Transit Company	6,612 69	347 16
Merchants' Dispatch, Incorporated	13,455 64	706 42
Pacific Fruit Express Company	2,673,114 55	140,338 52
Pullman Company, The	3,297,615 48	173,124 82
Semet Solvay Company	24 05	1 87
Standard Tank Car Company	6,668 31	350 08
Swift Refrigerator Transportation Company	5,893 26	309 40
Union Refrigerator Transit Company	20,377 69	1,069 82
Union Tank Car Company	93,998 01	4,934 90

SCHEDULE N.

EXPRESS COMPANIES.

State Taxes Levied Against Express Companies for the Year 1923.

Name of company	Assessment	Tax
American Railway Express Company	$10,216,012 92	$102,160 12
Pacific States Express Company	22,167 92	221 66

State Taxes Levied Against Express Companies for the Year 1924.

Name of company	Assessment	Tax
American Railway Express Company	$10,610,791 14	$106,107 90
Pacific States Express, Incorporated	66,778 24	667 78

SCHEDULE O.

STATE BANKS.

State Taxes Levied Against Domestic Banks for the Years 1923-1924.

Name of bank and location	1923	1924
Bank of Alameda, Alameda	$13,251 30	$13,670 90
Citizens Savings Bank, Alameda	3,426 36	3,439 30
Bank of Alhambra, Alhambra	615 18	583 28
Citizens Savings and Commercial Bank, Alhambra	---------	821 60
Alturas State Bank, Alturas	420 50	---------
Bank of Alameda County, Alvarado	3,291 82	3,477 76
American Savings Bank, Anaheim	2,151 64	2,309 66
Southern County Bank, Anaheim	1,722 90	1,758 72
Calaveras County Bank, Angels Camp	2,556 20	2,865 30
Antioch Bank of Savings, Antioch	489 72	497 68
Bank of Antioch, Antioch	3,223 92	2,247 54
Bank of Arbuckle, Arbuckle	1,649 34	1,601 32
Arcadia Savings Bank, Arcadia	---------	446 98
Arcata Savings Bank, Arcata	2,033 84	2,284 24
Bank of Arcata, Arcata	3,162 82	3,253 34
Bank of Arroyo Grande, Arroyo Grande	1,976 34	1,981 14
Central Bank of California, Auburn	2,168 14	2,093 08
Placer County Bank, Auburn	2,989 32	3,007 86
Azusa Valley Savings Bank, Azusa	858 90	913 58
First Bank of Kern, Bakersfield	2,511 04	2,563 46
Security Trust Company, Bakersfield	13,757 40	14,351 86
Bank of Balboa, Balboa	778 46	765 02
Baldwin Park Savings Bank, Baldwin Park	---------	424 68
Bank of Beaumont, Beaumont	945 68	983 40
Community State Bank, Bell	424 12	365 26
Commercial Bank, Bellflower	404 34	448 80
Belvedere State Bank, Belvedere Gardens	415 88	381 08
Berkeley Bank, Berkeley	---------	2,965 32
Berkeley Commercial and Savings Bank, Berkeley	6,749 27	---------
Beverly State Bank, Beverly Hills	501 28	1,187 94
Sacramento Valley Bank, Biggs	976 38	949 18
Inyo County Bank, Bishop	2,271 94	2,531 96
Imperial Valley Bank, Brawley	2,616 32	---------
Farmers and Merchants Savings Bank, Burbank	757 00	956 90
State Bank, Burbank	700 14	1,476 42
Bank of Burlingame, Burlingame	1,415 46	1,560 60
Peninsular Bank, Burlingame	820 54	842 54
Central Bank of Imperial Valley, Calexico	1,521 52	1,863 44
Farmers Bank, Camarillo	778 02	804 00
Bank of Cambria, Cambria	1,233 12	1,292 62
Bank of Carmel, Carmel	---------	768 48
Surprise Valley Bank, Cedarville	1,054 42	---------
Bank of Ceres, Ceres	1,049 86	1,034 50
Butte County Savings Bank, Chico	4,049 34	4,203 40
Peoples Savings and Commercial Bank, Chico	1,622 54	1,633 50
Chino Savings Bank, Chino	559 82	521 30
Farmers and Merchants State Bank, Chino	767 90	541 90
Peoples State Bank, Chula Vista	773 64	802 74
First Bank of Clovis, Clovis	1,016 66	976 78
Colma State Bank, Colma	1,303 14	---------
Colusa County Bank, Colusa	11,011 96	10,625 14
First Savings Bank, Colusa	1,242 00	1,452 16
Farmers and Merchants Bank, Compton	1,047 46	1,806 78
Bank of Concord, Concord	787 10	790 28
Bank of Corning, Corning	1,107 52	1,145 14
Tehama County Savings Bank, Corning	1,262 78	1,248 12
Citizens Bank, Corona	485 66	576 30
Bank of Cottonwood, Cottonwood	460 70	492 62
Bank of Courtland, Courtland	889 66	1,152 26
Bank of Covelo, Covelo	290 04	290 28
Covina Valley Savings Bank, Covina	1,108 78	1,129 36
Del Norte County Bank, Crescent City	2,203 42	2,384 90
Culver City Commercial and Savings Bank, Culver City	390 00	1,942 02
Daly City Bank, Daly City	1,092 52	1,748 98
Bank of Davis, Davis	766 98	874 08
Growers Security Bank, Delano	870 92	811 16
Bank of Dixon, Dixon	4,904 76	5,273 72
Northern Solano Savings Bank, Dixon	739 32	765 76
Butte Valley State Bank, Dorris	520 92	537 84
Farmers and Merchants Bank, Dos Palos	745 66	785 12
Los Nietos Valley Bank, Downey	1,141 00	1,371 98
State Bank of Dunsmuir, Dunsmuir	1,273 94	1,302 06
Commercial Bank, Durham	387 22	472 32
Eagle Rock State Bank, Eagle Rock	---------	391 28
East Pasadena State Bank, East Pasadena	---------	822 48
Bank of East San Diego, East San Diego	---------	759 98
Cuyamaca State Bank, El Cajon	762 02	871 20
Bank of Elk Grove, Elk Grove	1,058 82	1,084 64
El Segundo State Bank, El Segundo	509 64	490 14
First Savings Bank, Emeryville	182 10	---------
Escalon State Bank, Escalon	817 32	893 18

SCHEDULE O—Continued.

STATE BANKS.

State Taxes Levied Against Domestic Banks for the Years 1923-1924.

Name of bank and location	1923	1924
Escondido Savings Bank, Escondido	$1,138 96	$1,228 84
Home Savings Bank, Escondido	467 82	523 66
Northern San Diego County Bank, Escondido	---------	1,650 98
Bank of Esparto, Esparto	528 72	632 96
Bank of Eureka, Eureka	5,581 50	6,061 82
Home Savings Bank, Eureka	3,895 28	4,746 60
Savings Bank of Humboldt County, Eureka	4,598 86	5,237 78
Security Savings Bank, Exeter	551 88	609 36
Fairfax Bank, Fairfax	812 24	789 00
Fairoaks Bank, Fairoaks	391 04	419 94
Citizens Commercial Bank, Fallbrook	432 14	443 30
Ferndale Bank, Ferndale	2,704 54	2,894 22
Russ Williams Banking Company, Ferndale	1,127 46	1,187 26
Fillmore State Bank, Fillmore	1,950 98	2,652 78
Bank of Folsom, Folsom	1,113 66	1,239 44
Modoc County Bank, Fort Bidwell	612 26	1,793 84
Fort Bragg Commercial Bank, Fort Bragg	1,509 98	1,881 52
Scott Valley Bank, Fort Jones	2,522 40	2,121 44
Bank of Fortuna, Fortuna	1,115 06	1,285 98
Industrial Bank, Fresno	2,311 74	2,381 24
Valley Bank, Fresno	11,631 68	---------
Fullerton Commercial and Savings Bank, Fullerton	1,953 97	1,981 48
Standard Bank of Orange County, Fullerton	902 20	889 76
Bank of Galt, Galt	746 62	668 68
Citizens State Savings Bank, Gardena	518 26	534 88
Farmers and Merchants Bank, Gardena	813 88	868 06
Citizens Bank, Garden Grove	332 62	335 82
Community Savings and Commercial Bank, Glendale	629 56	653 70
Federal Commercial and Savings Bank, Glendale	---------	1,852 90
Glendale Savings Bank, Glendale	947 32	1,902 10
First Savings Bank, Glendora	508 52	570 58
Glendora Bank, Glendora	1,104 10	1,172 16
Nevada County Bank, Grass Valley	6,181 24	6,671 94
Indian Valley Bank, Greenville	779 76	781 32
Bank of Guerneville, Guerneville	923 22	883 34
Bank of Gustine, Gustine	2,187 56	2,111 36
Bank of Half Moon Bay, Half Moon Bay	1,045 42	1,041 42
Peoples Savings Bank, Hanford	1,525 76	1,547 34
Hawthorne State Bank, Hawthorne	441 96	771 78
Bank of Haywards, Hayward	1,122 66	4,039 24
Haywards Bank of Savings, Hayward	2,534 28	---------
Farmers and Mechanics Savings Bank, Healdsburg	1,902 12	2,036 76
Healdsburg Savings Bank, Healdsburg	1,796 62	1,910 72
Farmers and Mechanics Bank, Hemet	1,460 94	1,536 12
First Bank of Hermosa Beach, Hermosa Beach	871 18	768 00
First Bank of Highland, Highland	709 26	763 84
Hollister Savings Bank, Hollister	2,308 28	2,471 58
Federal Trust and Savings Bank, Hollywood	5,002 00	5,099 06
Hollywood State Bank, Hollywood	437 82	899 66
Holtville Bank, Holtville	775 40	748 42
Bank of Hopland, Hopland	420 56	439 58
Bank of Hueneme, Hueneme	908 74	909 18
Bank of Hughson, Hughson	622 74	630 82
Home State Bank, Huntington Beach	---------	758 40
Huntington Park State Bank, Huntington Park	---------	901 42
Walnut Park Bank, Huntington Park	387 04	900 28
Farmers and Merchants Bank, Imperial	893 24	652 44
Citizens Savings Bank, Inglewood	1,107 04	1,771 48
Inglewood Savings Bank, Inglewood	391 46	915 26
Bank of Isleton, Isleton	918 52	967 06
Bank of Amador County, Jackson	3,837 62	4,333 16
First Bank of Jamestown, Jamestown	373 30	326 94
First Bank of Johannesburg, Johannesburg	447 72	383 94
Kingsburg Bank, Kingsburg	2,251 58	2,422 24
Citizens Bank, Laguna Beach	---------	362 50
Citizens Commercial and Savings Bank, La Habra	748 58	753 48
Bank of Lake, Lakeport	1,471 04	1,474 98
Farmers Savings Bank, Lakeport	2,207 76	2,355 70
Lakeside Commercial and Savings Bank, Lakeside	408 20	385 72
Bank of La Mesa, La Mesa	657 72	691 76
Antelope Valley Bank, Lancaster	743 30	745 44
Farmers and Merchants Bank, La Verne	631 32	---------
Le Grand Bank, Le Grand	602 22	---------
Bank of Lemon Cove, Lemon Cove	320 04	---------
Bank of Lemoore, Lemoore	453 68	---------
Lennox State Bank, Lennox	---------	---------
Bank of Lincoln, Lincoln	1,151 04	---------
Bank of Western Placer, Lincoln	586 60	---------
Lindsay Savings Bank, Lindsay	811 76	---------
First Bank of Livingston, Livingston	909 28	---------
Central Savings Bank, Lodi	2,331 10	---------

SCHEDULE O—Continued.

STATE BANKS.

State Taxes Levied Against Domestic Banks for the Years 1923-1924.

Name of bank and location	1923	1924
Farmers and Merchants Bank, Lodi	$2,247 98	---------
Bank of Loleta, Loleta	479 04	---------
State Bank of Lomita, Lomita	361 18	---------
American Savings Bank, Long Beach	3,239 56	---------
Bank of North Long Beach, Long Beach	810 06	---------
Citizens State Bank, Long Beach	---------	$1,637 74
Farmers and Merchants Bank, Long Beach	14,366 36	13,281 50
Golden State Bank, Long Beach	3,547 12	---------
Marine Trust and Savings Bank, Long Beach	3,246 56	5,559 02
Union State Bank, Long Beach	386 58	882 62
Western Savings Bank, Long Beach	5,379 62	5,328 04
Bank of Loomis, Loomis	1,715 54	1,832 32
Bank of America, Los Angeles	9,396 54	22,325 60
Arlington Heights State Bank, Los Angeles	---------	1,691 74
Arroyo Seco State Bank, Los Angeles	---------	769 68
California Bank, Los Angeles	42,478 58	59,749 56
California Savings and Commercial Bank, Los Angeles	1,566 36	1,363 94
Central Commercial and Savings Bank, Los Angeles	1,637 42	1,611 08
Citizens Bank of Harbor City, Los Angeles	430 56	447 48
Citizens Trust and Savings Bank, Los Angeles	26,283 18	37,823 58
Hellman Commercial Trust and Savings Bank, Los Angeles	38,805 30	41,951 02
Manchester Moneta Avenue State Bank, Los Angeles	---------	368 38
Pacific Southwest Trust and Savings Bank, Los Angeles	182,689 50	198,461 90
Santa Monica Boulevard State Bank, Los Angeles	---------	367 42
Second Avenue State Bank, Los Angeles	327 18	454 16
Security Trust and Savings Bank, Los Angeles	170,156 20	191,476 26
Union Bank and Trust Company, Los Angeles	19,364 12	20,386 80
West Adams State Bank, Los Angeles	604 50	648 06
West Side State Bank, Los Angeles	438 16	692 60
Whittier Boulevard State Bank, Los Angeles	363 86	381 34
York Boulevard State Bank, Los Angeles	836 58	595 66
Bank of Los Banos, Los Banos	2,526 14	2,735 60
Bank of Los Gatos, Los Gatos	2,968 28	3,027 24
Southwest State Bank, Los Angeles	1,799 24	1,700 86
Sierra Valley Bank, Loyalton	817 24	903 24
State Bank, Manhattan Beach	384 40	405 50
Bank of Manteca, Manteca	782 70	782 22
Bank of Maricopa, Maricopa	903 30	---------
Bank of Martinez, Martinez	2,993 42	2,990 28
Decker Jewett and Company Bank, Marysville	3,273 22	3,347 32
Northern California Bank of Savings, Marysville	4,386 24	4,811 34
First Bank of Maywood, Maywood	479 38	848 24
Merced Security Savings Bank, Merced	7,151 60	6,975 76
Bank of Mill Valley, Mill Valley	1,036 34	1,439 28
Bank of Milpitas, Milpitas	806 56	884 98
Modesto Bank, Modesto	4,877 68	4,683 58
Modesto Savings Bank, Modesto	3,442 52	3,940 10
Moneta Commercial Bank, Moneta	700 14	619 92
Granite Savings Bank, Monrovia	824 18	1,046 86
Monrovia Savings Bank, Monrovia	2,024 50	2,184 36
Montague Banking Company, Montague	1,810 68	1,880 62
First State Bank, Montebello	---------	388 40
Bank of Monterey, Monterey	2,266 04	138 04
Monterey Savings Bank, Monterey	1,987 26	107 56
Monterey Park Commercial and Savings Bank, Monterey Park	---------	380 62
Montrose State Bank, Montrose	406 92	446 14
American Commercial and Savings Bank, Moorpark	410 54	442 14
Bank of Morgan Hill, Morgan Hill	953 28	1,020 56
Bank of Napa, Napa	6,829 84	5,573 60
Bank of Needles, Needles	620 78	---------
Monaghan and Murphy Bank, Needles	1,414 18	1,213 78
Bank of Newman, Newman	4,125 66	3,993 82
Farmers Bank of Imperial Valley, Niland	377 52	356 00
Bank of Norwalk, Norwalk	917 64	1,498 00
Norwalk Commercial and Savings Bank, Norwalk	---------	993 24
Novato Bank, Novato	506 36	991 48
Stanislaus County Savings Bank, Oakdale	1,719 04	1,854 00
American Bank, Oakland	5,167 74	12,062 00
Central Savings Bank, Oakland	20,781 48	22,421 38
Commercial Trust and Savings Bank, Oakland	7,669 42	542 60
Farmers and Merchants Saving Bank, Oakland	5,086 00	350 04
Oakland Bank, Oakland	44,459 22	849 12
State Savings Bank, Oakland	4,531 26	48 00
Bank of Oakley, Oakley	363 72	460 62
Ojai State Bank, Ojai	1,271 42	1,487 60
Euclid Savings Bank, Ontario	1,403 02	1,467 54
Security State Bank, Ontario	1,138 06	---------
First Commercial Bank, Orange	---------	1,108 38
Orange Savings Bank, Orange	1,933 44	2,029 82
Security Savings Bank, Orange	1,433 12	1,524 02
Bank of Orland, Orland	1,888 74	1,675 52

SCHEDULE O—Continued.

STATE BANKS.

State Taxes Levied Against Domestic Banks for the Years 1923-1924.

Name of bank and location	1923	1924
Bank of Oroville, Oroville	$914 04	$946 74
State Bank, Owensmouth	668 74	763 92
Bank of A. Levy, Incorporated, Oxnard	10,607 88	11,040 18
Bank of E. Cooke Smith, Pacific Grove	646 32	651 92
Bank of Pacific Grove, Pacific Grove	1,810 38	1,917 16
Bank of Palo Alto, Palo Alto	3,980 18	4,687 16
Stanford Bank, Palo Alto	716 92	918 74
Citizens Savings Bank, Pasadena	4,913 32	5,575 76
Commercial Bank, Pasadena	--------	1,472 62
First Trust and Savings Bank, Pasadena	14,478 96	16,584 64
State Bank, Pasadena	1,036 58	1,585 34
Bank of Patterson, Patterson	860 08	261 54
Commercial Bank, Patterson	948 18	966 28
Bank of Perris, Perris	421 36	425 46
Petaluma Savings Bank, Petaluma	3,953 10	4,176 86
Bank of Pinole, Pinole	2,747 78	2,848 28
Contra Costa County Bank, Pittsburg	1,905 64	--------
Placentia Savings Bank, Placentia	495 40	541 40
El Dorado County Bank, Placerville	3,065 14	3,216 96
Amador Valley Savings Bank, Pleasanton	835 00	942 62
Bank of Pleasanton, Pleasanton	1,619 10	1,720 94
Bank of Point Arena, Point Arena	393 54	398 96
American Savings Bank, Pomona	1,123 10	1,160 48
Pomona Commercial and Savings Bank, Pomona	2,055 80	2,117 26
State Bank, Pomona	2,686 48	2,788 22
Home Bank, Porterville	1,685 96	1,664 28
Pioneer Bank, Porterville	2,506 86	--------
Bank of Princeton, Princeton	985 20	845 78
Puente Savings Bank, Puente	528 36	559 88
Plumas County Bank, Quincy	1,397 14	1,802 64
State Bank, Ramona	602 40	589 62
Bank of Tehama County, Red Bluff	9,967 62	9,857 26
First Savings Bank of Shasta County, Redding	1,658 18	1,863 06
Redding Savings Bank, Redding	2,065 22	2,263 06
American Commercial and Savings Bank, Redondo Beach	--------	1,300 30
Farmers and Merchants Savings Bank, Redondo Beach	602 66	717 48
Redondo Savings Bank, Redondo Beach	1,281 46	1,740 06
San Mateo County Savings Bank, Redwood City	2,633 38	2,722 04
Reseda State Bank, Reseda	817 16	695 20
Mechanics Bank, Richmond	4,693 42	4,996 02
Bank of Rio Vista, Rio Vista	2,137 02	2,358 28
Delta Bank, Rio Vista	1,237 68	1,190 68
Bank of Ripon, Ripon	1,202 20	1,200 72
Rivera State Bank, Rivera	570 56	607 16
Citizens Bank of Arlington, Riverside	758 56	812 10
Peoples Trust and Savings Bank, Riverside	378 48	401 88
Security Savings Bank, Riverside	5,480 22	5,634 16
Roseville Banking Company, Roseville	2,235 06	2,393 24
Bank of Sacramento, Sacramento	--------	1,766 34
California Trust and Savings Bank, Sacramento	14,427 56	12,542 48
Citizens Bank, Sacramento	1,004 50	1,098 72
Farmers and Mechanics Bank, Sacramento	8,127 04	5,764 36
Nippon Bank, Sacramento	2,925 52	2,876 66
Peoples Bank, Sacramento	11,044 60	13,429 12
Sacramento-San Joaquin Bank, Sacramento	46,312 96	--------
Monterey County Bank, Salinas	5,467 14	5,669 24
Salinas City Bank, Salinas	6,416 72	6,648 12
Salinas Valley Savings Bank, Salinas	2,644 34	--------
Central Bank of Calaveras, San Andreas	989 34	1,017 58
First Bank of San Anselmo, San Anselmo	1,578 12	--------
California State Bank, San Bernardino	2,610 04	2,952 26
San Bernardino County Savings Bank, San Bernardino	5,441 62	6,160 46
San Bernardino Valley Savings Bank, San Bernardino	1,470 54	2,688 72
California Bank of San Mateo County, San Bruno	475 10	477 38
First Trust and Savings Bank, San Diego	8,805 46	9,430 48
San Diego Savings Bank, San Diego	10,147 32	14,813 56
Security Commercial and Savings Bank, San Diego	2,758 86	3,703 42
Southern Trust and Commerce Bank, San Diego	19,543 66	18,463 08
University Avenue Bank, San Diego	2,224 10	2,199 80
San Dimas Savings Bank, San Dimas	578 54	619 94
Bank of San Fernando, San Fernando	--------	871 20
San Fernando Valley Savings Bank, San Fernando	691 28	--------
American Bank, San Francisco	--------	48,118 40
Anglo California Trust Company, San Francisco	34,863 86	43,674 94
Asia Banking Corporation, San Francisco	4,350 00	914 10
Banca Popolare Fugazi, San Francisco	12,361 36	9,166 82
Bank of Italy, San Francisco	260,242 30	258,401 58
Bank of Montreal, San Francisco	4,725 98	4,651 92
British-American Bank, San Francisco	15,433 52	15,594 68
Canadian Bank of Commerce, San Francisco	18,497 46	18,717 40
Canton Bank, San Francisco	10,010 92	8,503 00

SCHEDULE O—Continued.

STATE BANKS.

State Taxes Levied Against Domestic Banks for the Years 1923-1924.

Name of bank and location	1923	1924
Columbus Savings and Loan Society, San Francisco	$4,280 76	---------
Commercial Bank of Spanish America, San Francisco	830 48	$130 80
Donohoe-Kelly Banking Company, San Francisco	12,502 28	12,433 34
First Federal Trust Company, San Francisco	32,176 02	34,579 34
French-American Bank, San Francisco	22,434 82	23,439 38
General Motors Acceptance Corporation, San Francisco	8,700 00	8,700 00
Hibernian Savings and Loan Society, San Francisco	51,062 18	72,352 10
Hongkong and Shanghai Banking Corporation, San Francisco	906 24	906 24
Humboldt Bank, San Francisco	21,438 74	24,024 68
International Banking Corporation, San Francisco	4,567 50	4,567 50
Italian-American Bank, San Francisco	20,315 92	25,594 46
Liberty Bank, San Francisco	13,842 32	10,321 54
Mercantile Trust Company, San Francisco	81,060 56	127,917 98
Mission Bank, San Francisco	2,523 10	2,292 74
Mission Savings Bank, San Francisco	8,539 14	8,752 02
Park Union Foreign Banking Corporation, San Francisco	2,413 02	---------
Portuguese-American Bank, San Francisco	8,419 26	---------
San Francisco Savings and Loan Society, San Francisco	66,593 42	70,551 60
Security Bank and Trust Company, San Francisco	16,476 92	---------
Sumitomo Bank, Limited, San Francisco	4,509 66	4,715 52
Union Trust Company, San Francisco	49,244 84	---------
United Bank and Trust Company, San Francisco	15,035 40	62,481 62
Wells-Fargo Bank and Union Trust Company, San Francisco	---------	230,354 10
Yokohama Specie Bank, Limited, San Francisco	15,035 40	14,978 48
Bank of San Gabriel, San Gabriel	873 16	902 54
Commercial Bank, Sanger	1,289 36	1,280 32
First Savings Bank, San Jacinto	496 18	536 04
Bank of San Jose, San Jose	7,631 72	7,678 80
Growers Bank, San Jose	4,265 14	4,234 86
Security Savings Bank, San Jose	4,781 68	4,969 54
Security State Bank, San Jose	3,362 90	4,773 26
First State Bank, San Juan Capistrano	---------	455 56
Bank of San Leandro, San Leandro	3,925 96	4,406 00
San Leandro State Bank, San Leandro	2,688 76	2,687 54
Citizens State Bank, San Luis Obispo	2,589 92	2,681 34
Bank of San Pedro, San Pedro	4,686 42	5,733 10
Harbor Commercial Savings Bank, San Pedro	1,373 28	1,340 48
Bank of San Rafael, San Rafael	4,647 82	4,840 54
Marin County Savings Bank, San Rafael	1,890 26	2,733 48
Tamalpais Bank, San Rafael	3,091 44	3,100 10
Farmers and Merchants Savings Bank, Santa Ana	4,000 38	4,520 80
Orange County Trust and Savings Bank, Santa Ana	5,770 82	6,034 46
Central Bank, Santa Barbara	2,307 94	2,304 78
City Savings Bank, Santa Cruz	4,276 82	4,926 96
Peoples Saving Bank, Santa Cruz	1,282 48	1,403 12
Santa Cruz Bank of Savings, Santa Cruz	2,777 96	2,965 94
Bank of Santa Fe Springs, Santa Fe Springs	435 10	351 70
Valley Savings Bank, Santa Maria	925 60	953 40
Citizens State Bank, Santa Monica	1,303 30	1,476 58
Marine Bank of Ocean Park, Santa Monica	1,428 68	1,576 36
Farmers and Merchants Bank, Santa Paula	4,538 68	---------
Santa Paula Savings Bank, Santa Paula	1,117 72	---------
Exchange Bank, Santa Rosa	6,001 22	5,676 52
Savings Bank of Santa Rosa, Santa Rosa	3,190 00	---------
Bank of Sausalito, Sausalito	1,223 62	1,820 78
Citizens State Bank, Sawtelle	2,164 74	2,733 28
California State Bank, Seal Beach	329 14	326 26
Analy State Bank, Sebastopol	857 30	877 76
Sebastopol Savings Bank, Sebastopol	1,252 44	1,326 00
Selma Savings Bank, Selma	1,036 92	1,014 58
First State Bank, Sherman	435 00	386 96
Sierra Madre Savings Bank, Sierra Madre	668 66	810 38
Bank of Mt. Shasta, Mt. Shasta	522 00	511 38
Smith River Bank, Smith River	594 96	617 62
Santa Ynez Valley Bank, Solvang	420 16	435 36
Tuolumne County Bank, Sonora	1,846 58	2,016 44
Home Commercial and Savings Bank, South Pasadena	774 50	746 20
Bank of South San Francisco, South San Francisco	2,897 10	3,038 58
Bank of St. Helena, St. Helena	2,147 88	2,079 36
First Savings Bank, St. Helena	1,442 98	1,490 62
City Bank, Stockton	7,618 06	8,090 38
Commercial and Savings Bank, Stockton	8,731 16	9,312 72
Stockton Savings and Loan Bank, Stockton	17,535 84	18,159 26
Union Safe Deposit Bank, Stockton	1,700 80	1,491 34
Solano County Savings Bank, Suisun	641 50	688 58
Bank of Lassen County, Susanville	3,430 54	3,461 22
Lassen Industrial Bank, Susanville	2,163 18	2,275 64
State Bank of Taft, Taft	1,341 84	1,254 24
Bank of Tehachapi, Tehachapi	995 68	1,068 18
Coachella Valley State Bank, Thermal	367 52	383 72
State Exchange Bank, Torrance	733 80	705 48

SCHEDULE O—Concluded.

STATE BANKS.

State Taxes Levied Against Domestic Banks for the Years 1923-1924.

Name of bank and location	1923	1924
Tujunga Valley Bank, Tujunga	$402 46	$409 98
Farmers State Bank, Tulare	1,453 78	1,466 14
Commercial Bank, Turlock	1,780 96	1,927 70
Peoples State Bank, Turlock	1,944 26	1,903 56
Security State Bank, Turlock	1,156 88	1,127 88
Commercial Bank, Ukiah	1,388 26	1,467 36
Savings Bank of Mendocino County, Ukiah	1,672 60	1,783 40
Citizens Savings Bank, Upland	734 80	750 32
Bank of Upper Lake, Upper Lake	391 98	433 38
Vacaville Savings Bank, Vacaville	754 52	764 56
Central Savings and Commercial Bank, Vallejo	4,575 66	3,343 04
First Savings Bank, Vallejo	1,344 84	1,245 04
Vallejo Bank of Savings, Vallejo	3,048 94	2,086 48
Dairyman's Bank, Valley Ford	3,843 10	3,975 02
Bank of Van Nuys, Van Nuys	1,365 30	1,576 08
State Bank, Venice	814 36	800 42
Venice Savings Bank, Venice	608 74	706 70
Home Savings Bank, Ventura	1,200 34	1,275 56
Bank of Visalia, Visalia	1,088 88	762 72
San Ramon Valley Bank, Walnut Creek	1,137 66	1,148 54
Bank of Alex Brown, Walnut Grove	2,786 66	2,906 64
Commercial and Savings Bank, Waterford	439 84	471 02
Bank of Watsonville, Watsonville	3,140 40	--------
Pajaro Valley Bank, Watsonville	1,726 22	1,410 82
Watsonville Savings Bank, Watsonville	2,013 16	--------
Farmers and Merchants Bank, Watts	807 00	1,169 08
Trinity County Bank, Weaverville	515 18	488 14
Farmers Bank, Wheatland	857 02	880 44
Home Savings Bank, Whittier	2,507 98	2,867 42
Whittier Savings Bank, Whittier	2,998 58	4,694 70
Bank of Williams, Williams	1,971 38	1,969 42
Bank of Willits, Willits	1,424 10	1,434 98
Bank of Willows, Willows	8,354 22	7,587 18
Glenn County Bank, Willows	3,104 66	2,918 22
Bank of Wilmington, Wilmington	659 28	--------
Seaboard Savings Bank, Wilmington	631 60	818 84
Citizens Bank, Winters	1,425 66	1,437 22
Savings Bank of Winters, Winters	552 84	511 50
Bank of Yolo, Woodland	4,361 04	4,045 60
Yolo County Savings Bank, Woodland	4,115 32	4,018 54
First Savings Bank of Siskiyou County, Yreka	1,090 32	1,122 00
Siskiyou County Bank, Yreka	2,941 02	2,856 82
Savings Bank of Sutter County, Yuba City	1,021 64	1,032 48
Bank of Zelzah, Zelzah	398 74	403 52
Totals	$2,248,794 17	$2,652,157 18

SCHEDULE P.

NATIONAL BANKS.

State Taxes Levied Against National Banks for the Years 1923-1924.

Name of bank and location	1923	1924
Citizens National Bank, Alameda	$2,191 34	$2,241 76
Commercial National Bank, Alameda	1,623 40	1,620 80
First National Bank, Alhambra	1,031 34	1,431 88
First National Bank, Alturas	1,638 80	1,628 86
Anaheim National Bank, Anaheim	988 72	947 12
First National Bank, Anaheim	2,186 40	2,864 70
Golden State National Bank, Anaheim	1,545 52	1,656 12
First National Bank, Antioch	468 10	488 68
First National Bank, Arcadia	473 08	555 16
First National Bank, Arcata	952 96	991 60
First National Bank, Artesia	690 82	533 96
First National Bank, Auburn	833 02	858 88
First National Bank, Azusa	1,389 64	1,440 58
National Bank of Bakersfield, Bakersfield	1,019 18	885 74
First National Bank, Baldwin Park	302 30	592 62
First National Bank, Banning	1,061 36	1,131 68
First National Bank, Bay Point	403 42	405 32
First National Bank, Bell	597 36	623 08
First National Bank, Bellflower	398 74	362 50
College National Bank, Berkeley	2,593 08	2,330 14
First National Bank, Berkeley	---------	4,038 90
First National Bank, Beverly Hills	915 10	1,110 52
First National Bank, Bishop	1,054 28	1,095 56
Farmers and Merchants National Bank, Blythe	691 44	808 98
First National Bank, Blythe	387 18	408 20
First National Bank, Brea	553 74	587 14
New First National Bank, Burbank	---------	746 20
First National Bank, Calexico	6,665 32	5,785 54
Calistoga National Bank, Calistoga	724 86	483 76
Growers National Bank, Campbell	726 70	---------
First National Bank, Caruthers	398 56	426 80
First National Bank, Chico	1,825 26	1,888 12
First National Bank, Chino	761 90	719 78
Chowchilla National Bank, Chowchilla	831 00	778 58
First National Bank, Chowchilla	332 76	324 44
First National Bank, Claremont	1,928 40	2,028 38
First National Bank, Cloverdale	1,370 46	1,446 58
First National Bank, Clovis	1,000 22	937 50
First National Bank, Coachella	555 24	526 74
Colton National Bank, Colton	1,027 30	1,066 64
First National Bank, Colton	1,300 48	1,227 00
First National Bank, Compton	1,322 86	2,744 54
First National Bank, Concord	1,470 76	1,572 90
First National Bank, Corcoran	1,091 98	1,167 02
Corona National Bank, Corona	480 02	484 88
First National Bank, Corona	1,241 12	1,416 28
Covina National Bank, Covina	1,170 24	1,298 78
First National Bank, Covina	1,955 22	1,889 46
First National Bank, Crockett	781 54	841 24
First National Bank, Crows Landing	497 98	504 80
First National Bank, Cucamonga	882 78	898 60
First National Bank, Culver City	364 44	805 68
First National Bank, Cutler	324 80	319 00
First National Bank, Delano	1,594 26	1,429 70
First National Bank, Del Rey	545 72	498 52
First National Bank, Dinuba	3,399 26	3,403 60
United States National Bank, Dinuba	741 70	808 16
First National Bank, Dixon	954 98	964 98
First National Bank, Downey	481 52	533 24
First National Bank, Ducor	386 56	409 98
First National Bank, Earlimart	391 50	391 50
First National Bank, El Centro	2,912 98	3,283 10
First National Bank, El Monte	982 12	1,325 16
First National Bank, El Segundo	414 62	356 32
First National Bank, Elsinore	534 82	565 38
First National Bank, Emeryville	289 58	---------
Escondido National Bank, Escondido	1,107 82	1,167 30
First National Bank, Escondido	813 80	982 98
First National Bank, Eureka	9,460 12	9,805 90
First National Bank, Exeter	1,334 32	1,315 90
First National Bank, Fairfield	741 94	794 52
Coast National Bank, Fort Bragg	1,494 32	1,488 78
First National Bank, Fowler	1,240 32	1,231 78
First National Bank, Fresno	---------	3,418 08
Growers National Bank, Fresno	3,378 22	---------
Union National Bank, Fresno	7,701 12	---------
Farmers and Merchants National Bank, Fullerton	1,625 78	1,645 40
First National Bank, Fullerton	1,497 54	1,358 52
First National Bank, Gardena	1,180 72	1,107 32
First National Bank, Garden Grove	1,110 78	1,117 50
First National Bank, Geyserville	661 56	707 18

SCHEDULE P—Continued.

NATIONAL BANKS.

State Taxes Levied Against National Banks for the Years 1923-1924.

Name of bank and location	1923	1924
First National Bank, Glendora	$775 68	$815 78
First National Bank, Grass Valley	---------	797 50
First National Bank, Hanford	4,125 98	4,032 96
Hanford National Bank, Hanford	2,906 90	2,967 14
First National Bank, Hardwick	541 66	547 68
First National Bank, Hayward	546 46	778 18
First National Bank, Healdsburg	2,928 22	2,994 88
Healdsburg National Bank, Healdsburg	2,625 06	2,625 42
First National Bank, Hemet	1,356 66	1,350 30
First National Bank, Hermosa Beach	563 36	486 04
National Bank of Hermosa Beach	780 38	775 92
First National Bank, Hollister	3,118 08	3,315 78
First National Bank, Holtville	1,187 40	1,220 98
First National Bank, Huntington Beach	---------	797 50
National Bank of Huntington Park	1,870 20	2,183 68
First National Bank, Hynes	521 08	556 42
First National Bank, Indio	728 34	766 50
First National Bank, Inglewood	2,293 12	3,993 48
Jamestown National Bank, Jamestown	414 36	407 40
First National Bank, Kingsburg	957 86	797 80
First National Bank, La Habra	1,300 18	1,367 66
First National Bank, Lamanda Park	464 20	461 00
First National Bank, Lankershim	435 00	435 00
First National Bank, Laton	510 76	488 88
First National Bank, La Verne	485 94	461 64
First National Bank, Lemoore	2,404 00	2,306 88
First National Bank, Lindsay	1,961 00	---------
First National Bank, Livermore	1,321 06	---------
Citizens National Bank, Lodi	3,712 00	3,808 50
First National Bank, Lodi	4,793 56	5,001 74
Lodi National Bank, Lodi	4,167 64	4,361 80
California National Bank, Long Beach	3,725 94	4,359 74
First National Bank, Long Beach	5,837 28	6,534 04
Long Beach National Bank, Long Beach	4,263 94	5,373 94
First National Bank, Los Altos	436 74	438 92
Citizens National Bank, Los Angeles	51,457 94	60,505 46
Commercial National Bank, Los Angeles	12,938 28	26,880 28
Continental National Bank, Los Angeles	9,363 10	9,364 96
Farmers and Merchants National Bank, Los Angeles	56,914 86	58,475 40
First National Bank, Los Angeles	102,756 48	114,732 40
Merchants National Bank, Los Angeles	32,905 30	38,828 24
National City Bank, Los Angeles	---------	16,931 74
Pacific National Bank, Los Angeles	---------	17,363 68
United States National Bank, Los Angeles	4,188 24	9,709 20
West Hollywood National Bank, Los Angeles	416 38	599 52
First National Bank, Los Gatos	686 80	728 48
First National Bank, Madera	1,686 94	1,804 94
First National Bank, Manteca	1,840 56	1,571 12
First National Bank of Contra Costa County, Martinez	828 22	---------
First National Bank, Marysville	1,090 62	1,166 46
McCloud National Bank, McCloud	1,156 12	1,197 88
First National Bank, McFarland	512 56	404 22
Farmers and Merchants National Bank, Merced	1,907 78	1,921 66
First National Bank, Modesto	2,500 06	2,460 92
First National Bank, Monrovia	2,923 52	3,151 80
National Bank of Monrovia, Monrovia	1,121 00	1,311 60
First National Bank, Monterey	1,790 90	1,883 22
First National Bank, Monterey Park	417 44	402 72
Farmers and Merchants National Bank, Mountain View	2,063 14	2,190 42
First National Bank, Mountain View	806 76	820 18
First National Bank, Napa	2,579 54	2,729 16
First National Bank, Newport Beach	410 74	431 30
First National Bank, Oakdale	2,708 24	3,065 44
Central National Bank, Oakland	32,579 78	32,605 04
First National Bank, Oakland	9,906 18	18,216 88
First National Bank, Ocean Park	864 98	950 12
First National Bank, Oceanside	820 92	960 00
First National Bank, Olive	471 24	506 30
First National Bank, Ontario	2,053 10	1,893 40
Ontario National Bank, Ontario	1,628 54	1,710 58
First National Bank, Orange	2,079 66	2,147 52
National Bank of Orange, Orange	3,156 54	3,283 02
First National Bank, Orange Cove	375 20	394 74
First National Bank, Orland	950 94	1,026 32
National Bank of Orosi, Orosi	782 86	689 44
First National Bank, Oroville	1,298 56	1,386 16
First National Bank, Palo Alto	1,836 42	2,150 28
First National Bank, Parlier	4,765 62	3,023 10
Central National Bank, Pasadena	2,020 52	2,110 92
First National Bank, Pasadena	7,454 94	7,926 68
Pasadena National Bank, Pasadena	---------	1,857 38

SCHEDULE P—Continued.

NATIONAL BANKS.

State Taxes Levied Against National Banks for the Years 1923-1924.

Name of bank and location	1923	1924
Security National Bank, Pasadena	$3,876 60	$4,149 50
Paso Robles National Bank, Paso Robles	836 20	819 24
First National Bank, Pescadero	402 60	405 28
Sonoma County National Bank, Petaluma	8,053 98	7,939 44
First National Bank, Pittsburgh	962 80	970 06
First National Bank, Pixley	406 58	407 30
Placentia National Bank, Placentia	845 88	869 98
Placerville National Bank, Placerville	750 72	808 58
First National Bank, Pleasanton	529 24	591 34
American National Bank, Pomona	3,323 76	3,322 32
First National Bank, Pomona	7,386 92	7,909 14
First National Bank, Porterville	4,743 96	5,035 24
First National Bank, Puente	1,079 76	1,134 26
Puente National Bank, Puente	332 72	414 72
Red Bluff National Bank, Red Bluff	1,703 52	1,668 08
Northern California National Bank, Redding	1,638 76	1,844 02
Redding National Bank, Redding	1,727 18	1,775 10
First National Bank, Redlands	1,787 84	1,740 00
Farmers and Merchants National Bank, Redondo Beach	1,356 88	1,357 08
First National Bank, Redondo Beach	740 78	962 66
First National Bank of San Mateo County, Redwood City	5,456 24	5,898 06
Reedley National Bank, Reedley	1,798 42	1,629 66
Citizens National Bank, Rialto	402 12	371 26
First National Bank, Rialto	995 28	1,009 16
First National Bank, Ripon	398 74	398 74
First National Bank, Richmond	---------	1,740 00
First National Bank, Riverbank	424 84	361 32
First National Bank, Riverdale	1,091 64	1,079 82
Citizens National Bank, Riverside	6,987 02	7,389 88
First National Bank, Riverside	3,114 52	3,564 44
First National Bank, Rodeo	757 56	607 90
Railroad National Bank, Roseville	811 12	831 32
Roseville National Bank, Roseville	815 62	819 78
California National Bank, Sacramento	18,905 88	16,830 66
Capitol National Bank, Sacramento	10,556 36	9,388 62
Merchants National Bank, Sacramento	3,908 70	4,117 74
National Bank of D. O. Mills and Company, Sacramento	22,739 28	22,181 26
First National Bank, Salida	358 86	361 94
First National Bank, Salinas	4,130 70	---------
American National Bank, San Bernardino	2,455 98	2,524 80
Farmers Exchange National Bank, San Bernardino	3,097 92	3,263 56
San Bernardino National Bank, San Bernardino	5,633 90	5,663 00
First National Bank, San Diego	22,744 84	23,206 82
Union National Bank, San Diego	3,610 06	3,640 86
United States National Bank, San Diego	383 26	231 01
First National Bank, San Dimas	1,426 52	1,418 98
First National Bank, San Fernando	418 52	366 38
American National Bank, San Francisco	29,203 54	---------
Anglo London and Paris National Bank, San Francisco	118,240 20	116,783 80
Bank of California National Association, San Francisco	229,827 94	229,641 70
Crocker National Bank, San Francisco	122,882 40	130,504 56
First National Bank, San Francisco	52,521 48	45,222 52
Merchants National Bank, San Francisco	21,799 42	---------
Wells Fargo Nevada National Bank, San Francisco	157,943 10	---------
First National Bank, San Gabriel	677 76	725 32
First National Bank, Sanger	1,975 40	549 54
First National Bank, San Jacinto	1,409 98	1,503 24
First National Bank, San Joaquin	486 66	498 76
First National Bank, San Jose	11,191 42	12,670 56
First National Bank, San Juan Bautista	468 58	509 74
First National Bank, San Leandro	1,207 72	1,262 52
National Bank of San Mateo, San Mateo	1,705 42	2,069 14
First National Bank, San Pedro	2,646 40	3,155 26
Marin County National Bank, San Rafael	917 10	1,061 96
American National Bank, Santa Ana	3,176 96	3,089 74
First National Bank, Santa Ana	15,068 66	17,943 86
County National Bank and Trust Company, Santa Barbara	6,788 62	6,942 52
First National Bank, Santa Barbara	6,854 76	6,951 64
Farmers and Merchants National Bank, Santa Cruz	1,957 96	1,948 32
First National Bank, Santa Cruz	3,561 70	3,657 22
Santa Cruz County National Bank, Santa Cruz	3,606 92	3,728 96
First National Bank, Santa Maria	2,855 14	2,923 68
First National Bank, Santa Monica	1,989 00	1,926 60
First National Bank and Trust Company, Santa Paula	4,577 24	---------
First National Bank, Santa Rosa	1,595 00	1,595 00
First National Bank, Sausalito	---------	765 43
United States National Bank, Sawtelle	707 02	603 62
First National Bank, Scotia	1,113 90	1,915 52
First National Bank, Sebastopol	1,664 80	1,708 58
Sebastopol National Bank, Sebastopol	1,272 52	1,346 66
First National Bank, Selma	2,841 12	2,764 34

SCHEDULE P—Concluded.

NATIONAL BANKS.

State Taxes Levied Against National Banks for the Years 1923-1924.

Name of bank and location	1923	1924
Selma National Bank, Selma	$59 46	$1 38
First National Bank, Shafter	358 40	358 48
First National Bank, Sherman	438 02	468 28
First National Bank, Sierra Madre	191 56	92 02
Valley National Bank, Sonoma	---------	1,766 42
First National Bank, Sonora	3,463 50	3,545 76
Citizens National Bank, South San Francisco	---------	870 00
First National Bank, St. Helena	1,135 46	1,150 96
First National Bank, Stockton	9,726 70	10,010 56
Bank of Suisun National Association, Suisun	4,635 20	4,980 28
First Nat onal Bank, Suisun	1,678 30	1,754 40
First National Bank, Temecula	521 04	563 54
First National Bank, Terra Bella	534 14	734 22
First National Bank, Torrance	1,099 04	1,267 40
First National Bank, Tranquillity	744 98	802 38
First National Bank, Tulare	1,988 48	1,962 66
First National Bank, Turlock	1,303 64	949 40
First National Bank, Tustin	1,353 78	1,355 50
First National Bank, Ukiah	2,226 24	2,245 72
Commercial National Bank, Upland	1,418 54	1,455 72
First National Bank, Upland	1,161 64	1,143 18
First National Bank, Vacaville	1,060 86	1,192 16
First National Bank, Vallejo	2,030 00	2,048 50
Vallejo Commercial National Bank, Vallejo	1,375 48	1,536 92
First National Bank, Venice	641 24	693 32
First National Bank, Ventura	4,843 08	4,866 28
First National Bank, Vernon	697 50	842 26
First National Bank, Victorville	542 68	632 84
National Bank of Visalia, Visalia	3,807 44	201 58
Fruit Growers National Bank, Watsonville	1,801 72	1,821 66
Pajaro Valley National Bank, Watsonville	4,269 28	4,127 94
First National Bank, Watts	830 76	1,015 08
First National Bank, Weed	1,115 86	1,334 12
Westwood National Bank, Westwood	903 28	986 76
First National Bank, Whittier	6,007 08	4,892 36
Whittier National Bank, Whittier	3,071 20	3,247 80
First National Bank, Willits	844 08	812 00
First National Bank, Willows	1,630 40	1,550 28
First National Bank, Wilmington	1,084 96	---------
First National Bank, Winters	1,222 84	1,213 42
First National Bank, Woodlake	387 14	389 52
Bank of Woodland National Association, Woodland	3,940 20	4,118 42
First National Bank, Yorba Linda	606 62	601 60
First National Bank, Yreka	1,318 98	1,464 32
First National Bank, Yuba City	1,973 82	2,017 20
Totals	$1,599,808 50	$1,483,207 65

SCHEDULE Q.

INSURANCE COMPANIES.

State Taxes Levied Against Insurance Companies for the Years 1923-1924.

Name of company	1923	1924
Abeille Fire Insurance Company	$1,187 40	$1,471 74
Acacia Mutual Life Association	---------	3,472 44
Aetna Casualty and Surety Company	11,232 36	16,840 84
Aetna Insurance Company	31,762 30	35,676 88
Aetna Life Insurance Company	84,593 14	97,187 62
Affiliated Underwriters	---------	716 12
Agricultural Insurance Company	6,621 62	8,193 98
Alameda County Title Insurance Company	4,843 32	6,082 44
Albany Insurance Company	129 22	808 74
Allemania Fire Insurance Company	3,439 08	4,128 10
Alliance Assurance Company	1,312 08	1,343 70
Alliance Insurance Company	4,310 66	6,051 16
American Alliance Insurance Company	2,200 82	2,275 34
American and Foreign Marine Insurance Company	727 88	771 96
American Automobile Insurance Company	7,398 58	10,823 78
American Central Insurance Company	9,016 02	10,146 74
American Credit Indemnity Company	1,367 68	1,883 44
American Druggists Insurance Company	734 10	807 54
American Eagle Fire Insurance Company	3,635 56	4,920 36
American Equitable Assurance Company	1,475 10	338 70
American Exchange Underwriters	---------	85 26
American Indemnity Company	1,099 14	1,032 48
American Insurance Company of Newark	7,742 84	10,279 24
American Mutual Liability Insurance Company	2,618 98	2,502 78
American National Fire Insurance Company	4,006 98	2,588 44
American National Insurance Company	6,618 62	9,181 68
American Reinsurance Company	430 96	900 40
American Surety Company of New York	8,349 52	10,550 32
American Union Insurance Company of New York	---------	197 48
Associated Industries Insurance Corporation	---------	4,137 86
Assurance Company of America	526 68	1,623 94
Atlantic Mutual Fire Insurance Company	---------	146 68
Atlas Assurance Company	10,689 24	13,011 24
Automobile Indemnity Exchange of Orange County	3,142 08	3,433 78
Automobile Insurance Company of Hartford	19,844 62	27,492 28
Bankers and Shippers Insurance Company	6,595 34	7,205 04
Bankers Inter-Insurance Alliance	84 02	---------
Bankers Life Company	33,649 50	37,453 72
Beneficial Life Insurance Company	465 86	942 76
Boston Insurance Company	6,693 64	7,786 96
British-American Assurance Company	1,868 26	2,294 02
British and Foreign Marine Insurance Company	4,218 88	5,185 78
British General Insurance Company	278 00	1,265 22
Brotherhood Accident Company	1,137 74	1,287 26
Business Men's Assurance Company of America	3,148 00	4,971 14
Caledonian American Insurance Company	542 06	866 80
Caledonian Insurance Company	4,485 58	5,101 74
California Casualty Indemnity Exchange	10,461 68	18,257 88
California Highway Indemnity Exchange	3,925 50	5,157 24
California Insurance Company	5,330 56	8,644 20
California Pacific Title Insurance Company	10,999 68	12,877 46
California State Automobile Association	15,529 34	22,662 64
California State Life Insurance Company	22,772 58	24,576 32
California Title Insurance Company	2,138 74	10,799 68
Camden Fire Insurance Company	4,815 70	5,890 48
Canadian Life Assurance Company	1,956 12	4,121 78
Canton Insurance Office, Limited	2,230 56	---------
Casualty Reciprocal Exchange	2,226 08	2,351 66
Central Business Men's Association	1,247 30	836 14
Central Life Assurance Society	1,138 56	2,227 64
Central Manufacturers Mutual Insurance Company	946 20	1,141 42
Central National Fire Insurance Company	374 32	---------
Century Insurance Company, Limited	571 14	1,265 48
Citizens Insurance Company of Missouri	2,852 48	3,195 48
City Insurance Company of Pennsylvania	---------	1,040 56
City of New York Insurance Company	1,258 48	1,948 52
City Title Insurance Company	679 04	1,226 98
Cleveland National Fire Insurance Company	1,759 96	---------
Clover Leaf Life and Casualty Company	2,386 56	4,892 18
Columbia Casualty Company	16,661 56	21,348 90
Columbia Insurance Company	1,505 84	1,747 08
Columbian National Fire Insurance Company	979 46	1,931 56
Columbian National Life Insurance Company	5,106 34	5,805 94
Commerce Insurance Company	366 44	360 26
Commercial Casualty Insurance Company	563 20	3,425 86
Commercial Insurance Company of California	---------	4,032 98
Commercial Union Insurance Company, Limited	11,308 88	16,534 84
Commercial Union Fire Insurance Company	2,111 76	3,059 88
Commonwealth Insurance Company of New York	3,431 10	3,871 72
Concordia Fire Insurance Company	2,195 26	10,957 24
Connecticut Fire Insurance Company	10,706 06	11,044 20

SCHEDULE Q—Continued

INSURANCE COMPANIES.

State Taxes Levied Against Insurance Companies for the Years 1923-1924.

Name of company	1923	1924
Connecticut General Life Insurance Company	$2,689 84	$2,827 64
Connecticut Mutual Life Insurance Company	9,440 64	9,858 30
Continental Assurance Company	305 46	1,575 34
Continental Casualty Company	25,520 56	30,822 46
Continental Insurance Company	16,814 22	21,204 94
Continental Life Insurance Company	4,727 36	5,852 60
Contractors Indemnity Exchange	2,466 52	4,761 58
County Fire Insurance Company of Philadelphia	882 84	1,347 20
Detroit Fire and Marine Insurance Company	2,297 42	2,303 90
Des Moines Reinsurance Fire Company	958 76	120 80
Druggists Indemnity Exchange	94 24	152 74
Dubuque Fire and Marine Insurance Company	3,924 82	5,756 64
Eagle Fire Insurance Company of New York	----------	1,200 74
Eagle Indemnity Company	----------	958 50
Eagle Star and British Dominion Insurance Company	7,951 94	11,999 20
East Bay Title Insurance Company	----------	490 16
Employers Indemnity Corporation	2,850 74	2,769 18
Employers Fire Insurance Company	1,416 64	3,859 66
Employers Liability Insurance Corporation, Limited	30,012 24	28,233 32
Equitable Fire and Marine Insurance Company	1,571 90	2,169 26
Equitable Life Assurance Society of U. S.	129,841 06	139,016 50
Equitable Life Insurance Company of Iowa	6,866 26	7,975 10
Eureka Security Fire and Marine Insurance Company	68 38	3,402 14
Excelsior Insurance Company of New York	1,053 56	918 26
Export Insurance Company	----------	175 82
Farmers Insurance Company	----------	776 90
Farmers Mutual Fire Association of Tulare County	327 92	453 48
Farmers Mutual Fire Insurance Company of Mendocino County	23 70	36 96
Farmers Mutual Fire Insurance Company of San Benito County	44 16	37 38
Farmers Mutual Fire Insurance Company of Turlock	340 78	605 26
Farmers Mutual Fire Insurance Company of Yolo County	267 16	313 40
Farmers Mutual Protective Fire Ins. Co. of San Joaquin County	732 84	853 50
Federal Casualty Company	1,013 56	1,482 78
Federal Insurance Company	6,125 10	8,440 84
Federal Life Insurance Company	251 78	533 58
Federal Mutual Liability Insurance Company	13,446 44	24,171 72
Fidelity and Casualty Company	32,164 60	35,550 78
Fidelity and Deposit Company of Maryland	27,740 58	30,630 92
Fidelity Mutual Life Insurance Company	10,225 68	10,957 32
Fidelity Phenix Fire Insurance Company	13,223 62	16,458 38
Fire Association of Philadelphia	9,860 84	9,338 32
Firemans Fund Insurance Company	49,294 12	68,686 42
Firemens Insurance Company	4,237 50	5,660 34
Fitchburg Mutual Fire Insurance Company	588 12	581 18
Foncier Transports Insurance Company	981 24	920 54
Franklin Fire Insurance Company of Philadelphia	7,777 40	6,803 86
General Accident, Fire and Life Assurance Corporation	23,866 58	25,969 96
General Fire Insurance Company	1,852 14	2,107 82
General Indemnity Corporation	----------	20 60
General Insurance Company of America	----------	36 86
Georgia Casualty Company	4,601 34	6,140 80
Girard Fire and Marine Insurance Company	954 64	1,449 94
Glenn County Farmers Mutual Fire Insurance Company	37 10	28 24
Glens Falls Insurance Company	9,181 52	8,492 06
Globe and Rutgers Fire Insurance Company	16,918 10	21,520 04
Globe Indemnity Company of New York	32,101 00	35,577 48
Grain Dealers National Mutual Fire Insurance Company	211 94	307 96
Great American Casualty Company	----------	386 24
Great American Insurance Company	19,426 78	21,167 58
Great Lakes Insurance Company	1,353 66	1,160 84
Great Northern Life Insurance Company	----------	994 00
Great Republic Life Insurance Company	7,925 10	10,274 26
Great Western Accident Association	3,218 06	4,770 50
Great Western Fire Insurance Company	500 76	1,336 52
Guarantee Fund Life Association	2,842 66	3,379 92
Guardian Life Insurance Company	9,256 52	10,290 48
Hamilton Fire Insurance Company	357 46	637 04
Hampton Roads Fire and Marine Insurance Company	----------	585 48
Hanover Fire Insurance Company	4,187 20	5,963 44
Hardware Dealers Mutual Fire Insurance Company	1,005 54	1,414 30
Hartford Accident and Indemnity Company	38,163 56	52,583 74
Hartford Fire Insurance Company	48,438 72	60,139 96
Hartford Live Stock Insurance Company	1,993 34	893 84
Hartford Steam Boiler Inspection and Insurance Company	2,362 70	3,229 28
Hawkeye Securities Fire Insurance Company	1,647 36	2,501 74
Hilmar Mutual Fire Insurance Company	137 60	143 44
Home Fire and Marine Insurance Company of California	10,604 44	12,385 24
Home Insurance Company of New York	40,097 98	54,282 16
Home Life Insurance Company	6,630 50	5,760 64
Hudson Insurance Company	1,314 88	2,015 44
Humboldt County Fire Insurance Company	141 32	201 42

SCHEDULE Q—Continued.

INSURANCE COMPANIES.

State Taxes Levied Against Insurance Companies for the Years 1923-1924.

Name of company	1923	1924
Idaho State Life Insurance Company	$278 10	$602 58
Illinois Bankers Life Association	513 50	968 82
Imperial Assurance Company	2,132 76	2,594 74
Importers and Exporters Insurance Company	2,787 36	1,631 94
Indemnity Insurance Company of North America	2,492 04	6,525 04
Indemnity Mutual Marine Assurance Company	110 48	84 80
Independence Indemnity Company	---------	5,314 68
Independence Insurance Company	376 96	344 22
Indiana Lumberman's Mutual Insurance Company	230 58	306 36
Individual Underwriters	423 46	343 84
Industrial Fire Insurance Company	418 34	146 58
Insurance Company of North America	34,128 98	50,995 26
Insurance Company of State of Pennsylvania	3,368 98	4,319 78
Inter-Insurance Exchange of Automobile Club of Sou. Californ'a	61,634 16	70,417 10
International Indemnity Company	17,914 48	19,995 92
International Life Insurance Company	3,354 56	6,419 88
Inter-Ocean Casualty Company	662 56	1,626 30
Inter Ocean Reinsurance Company	---------	5,807 48
Inters ate Business Mens Accident Association	1,195 72	1,424 58
Interstate Casualty Company	5,578 30	6,039 44
Iowa National Fire Insurance Company	333 02	1,718 36
Jefferson Standard Life Insurance Company	84 26	213 14
John Hancock Mutual Life Insurance Company	---------	4,382 66
Kansas City Life Insurance Company	2,956 58	5,105 08
Knickerbocker Insurance Company	805 34	300 62
Lake County Farmers Mutual Fire Insurance Company	23 44	45 78
La Salle Fire Insurance Company	1,364 42	1,749 48
Laundry Owners Insurance Exchange	756 68	1,092 38
Law Union and Rock Insurance Company	1,921 76	2,402 04
Liberty Fire Insurance Company	1,623 42	2,159 90
Lincoln National Life Insurance Company	10,108 68	16,401 44
Liverpool and London and Globe Insurance Company	16,934 44	16,599 10
Lloyds Plate Glass Insurance Company	573 02	638 04
London and Lancashire Fire Insurance Company	10,177 62	11,531 48
London and Lancashire Indemnity Company of America	4,120 96	5,274 90
London and Provincial Marine and General Insurance Company	649 26	1,045 66
London and Scottish Assurance Corporation	1,419 74	2,206 12
London Assurance Corporation	23,411 34	24,917 30
London Guarantee and Accident Company, Limited	24,123 04	27,678 96
Los Angeles Mutual Fire Insurance Company	1,028 56	900 60
Los Angeles Title Insurance Company	9,187 32	6,205 36
Loyal Protective Insurance Company	305 56	424 86
Lumbermen's Indemnity Exchange	1,313 14	---------
Lumbermen's Mutual Casualty Company	---------	99 92
Lumbermen's Mutual Insurance Company	562 44	1,092 92
Lumbermen's Reciprocal Underwriters	441 48	674 08
Lumbermen's Underwriting Alliance	697 48	1,043 26
Lumber Mutual Fire Insurance Company	474 04	583 00
Manhattan Life Insurance Company	1,657 38	1,764 04
Manufacturers and Wholesalers Indemnity Exchange	96 38	179 66
Manufacturers Indemnity Exchange	2,072 52	---------
Manufacturing Lumbermen's Underwriters	333 76	583 64
Marine Insurance Company, Limited, of London	1,126 52	1,477 60
Maritime Insurance Company, Limited	1,471 78	1,548 04
Marquette National Insurance Company	318 24	2,551 74
Maryland Assurance Corporation	485 46	576 22
Maryland Casualty Company	33,149 36	33,689 74
Maryland Motor Car Insurance Company	1,426 40	1,357 48
Masonic Mutual Accident Company	1,587 64	1,789 04
Massachusetts Bonding and Insurance Company	8,816 90	8,713 64
Massachusetts Fire and Marine Insurance Company	274 14	507 46
Massachusetts Mutual Life Insurance Company	18,518 58	20,428 30
Massachusetts Protective Association	7,214 20	9,057 72
Mechanics and Traders Insurance Company	2,271 04	3,379 54
Mechanics Insurance Company of Philadelphia	1,577 16	2,355 02
Medical Protective Association	1,891 40	2,582 40
Mercantile Insurance Company of America	4,422 12	7,625 22
Merchants and Shippers Insurance Company	38 64	---------
Merchants Fire Assurance Corporation	6,216 08	9,438 48
Merchants Fire Insurance Company	1,445 24	1,346 76
Merchants Life Insurance Company	1,086 52	1,565 64
Metropolitan Casualty Insurance Company	463 50	605 36
Metropolitan Life Insurance Company	230,243 78	264,925 52
Michigan Fire and Marine Insurance Company	1,670 70	2,767 48
Millers Mutual Fire Insurance Association	---------	1,498 38
Millers National Insurance Company	12,932 62	14,138 76
Mill Owners Mutual Fire Insurance Company	487 06	558 28
Milwaukee Mechanics Insurance Company	---------	2,951 80
Minneapolis Fire and Marine Insurance Company	958 94	---------
Minnesota Implement and Mutual Fire Insurance Company	1,552 34	2,016 10
Missouri State Life Insurance Company	7,063 44	11,381 66

SCHEDULE Q—Continued.

INSURANCE COMPANIES.

State Taxes Levied Against Insurance Companies for the Years 1923-1924.

Name of company	1923	1924
Montana Life Insurance Company	$523 62	$1,636 18
Mutual Benefit Health and Accident Association	11,894 41	19,441 58
Mutual Benefit Life Insurance Company	34,943 30	32,544 76
Mutual Life Insurance Company of New York	87,760 14	94,574 00
Napa County Farmers Mutual Fire Insurance Company	66 50	81 54
National Automobile Insurance Company	12,953 56	19,044 98
National Ben Franklin Fire Insurance Company	5,686 86	4,523 34
National Casualty Company	1,591 84	2,059 76
National Fire Insurance Company of Paris, France	1,187 40	1,471 74
National Fire Insurance Company	18,928 60	20,926 90
National Implement Mutual Fire Insurance Company	---------	335 62
National Liberty Insurance Company of America	4,738 58	5,689 22
National Life and Accident Insurance Company	813 58	1,990 94
National Life Association	991 54	2,770 12
National Life Insurance Company	12,342 20	11,212 22
National Life Insurance Company of U. S. A.	12,967 96	12,015 88
National Reserve Insurance Company	2,255 84	3,988 16
National Retailers Mutual Insurance Company	---------	122 40
National Surety Fire Insurance Company	238 58	---------
National Surety Company	27,508 80	41,820 98
National Travelers Casualty Association	130 04	181 00
National Union Fire Insurance Company	7,558 88	10,326 66
Netherlands Fire and Life Insurance Company	7,856 58	10,278 76
Nevada Fire Insurance Company	1,073 24	1,675 48
New Amsterdam Casualty Company	12,367 30	15,123 72
Newark Fire Insurance Company	4,040 56	4,568 06
New England Mutual Life Insurance Company	18,515 12	17,473 04
New Hampshire Fire Insurance Company	4,926 96	5,368 14
New Jersey Fidelity and Plate Glass Insurance Company	1,994 12	1,782 28
New Jersey Fire Insurance Company	3,380 06	2,602 30
New World Life Insurance Company	1,322 62	1,677 18
New York Indemnity Company	---------	6,625 98
New York Life Insurance Company	248,324 70	265,910 54
New York Plate Glass Insurance Company	1,774 00	1,976 88
New York Reciprocal Underwriters	233 06	990 48
New Zealand Insurance Company	4,577 48	6,250 58
Niagara Fire Insurance Company	20,059 86	27,223 74
North American Accident Insurance Company	4,075 22	3,855 12
North American Life Insurance Company	950 88	1,284 96
North American National Insurance Company	1,255 70	2,002 22
North British and Mercantile Insurance Company	19,882 98	24,923 16
North Carolina Home Insurance Company	188 40	283 94
North China Insurance Company, Limited	1,873 10	2,308 82
Northern Assurance Company	18,755 86	20,908 78
Northern Insurance Company of New York	1,204 84	1,921 76
Northern Life Insurance Company	2,014 34	3,830 12
North River Insurance Company	13,991 72	20,063 40
Northwestern Fire and Marine Insurance Company	869 56	999 22
Northwestern Mutual Fire Association	8,009 24	7,947 04
Northwestern Mutual Life Insurance Company	61,136 76	56,554 20
Northwestern National Insurance Company	18,515 44	19,824 48
Northwestern National Life Insurance Company	2,095 64	3,000 60
Norwegian Atlas Insurance Company	818 64	---------
Norwich Union Fire Insurance Society	14,392 98	20,360 12
Norwich Union Indemnity Company	9,309 54	12,320 36
Oakland Title Insurance and Guaranty Company	2,317 28	3,836 52
Occidental Life Insurance Company	30,241 86	32,367 98
Ocean Accident and Guarantee Corporation, Limited	2,570 56	28,468 04
Ocean Marine Insurance Company	1,003 38	1,095 14
Ohio Farmers Insurance Company	---------	998 04
Old Colony Insurance Company	1,325 64	2,139 76
Old Line Life Insurance Company of America	---------	165 12
Olds and Stoller Inter-Exchange	13,637 58	19,121 00
Omaha Liberty Fire Insurance Company	523 82	1,291 20
Orange County Farmers Mutual Fire Insurance Company	537 72	1,024 04
Order Railway Employees	6,197 88	6,763 24
Oregon Fire Relief Association	614 18	783 14
Orient Insurance Company of Hartford	4,123 48	4,669 34
Pacific Automobile Indemnity Exchange	26,163 38	29,722 46
Pacific Employers Insurance Company	---------	379 92
Pacific Fire Insurance Company	1,860 26	3,216 68
Pacific Mutual Life Insurance Company	39,465 98	39,542 98
Pacific National Fire Insurance Company	1,351 96	1,765 14
Pacific States Fire Insurance Company	1,588 82	1,793 94
Palatine Insurance Company	7,387 10	10,159 24
Pan-American Life Insurance Company	---------	251 32
Patriotic Insurance Company	811 10	2,098 42
Penn Mutual Life Insurance Company	38,146 72	37,584 34
Pennsylvania Fire Insurance Company	10,844 80	13,535 24
Pennsylvania Lumbermen's Mutual Fire Insurance Company	346 74	486 72
Pennsylvania Miller's Mutual Fire Insurance Company	---------	260 52

SCHEDULE Q—Continued.

INSURANCE COMPANIES.

State Taxes Levied Against Insurance Companies for the Years 1923-1924.

Name of company	1923	1924
Peoples National Fire Insurance Company	$1,748 86	$2,149 70
Phoenix Fire Insurance Company of Paris, France	1,187 40	1,474 44
Philadelphia Fire and Marine Insurance Company	----------	1,871 70
Phoenix Assurance Company, Limited, of London	12,840 84	11,540 32
Phoenix Indemnity Company	447 16	2,353 14
Phoenix Insurance Company of Hartford	15,361 04	16,669 60
Phoenix Mutual Life Insurance Company	17,033 82	17,712 30
Pioneer Title Insurance Company	1,239 40	1,446 66
Pittsburgh Fire Insurance Company	55 12	35 00
Preferred Accident Insurance Company	3,024 68	2,814 08
Preferred Risk Fire Insurance Company	----------	1,230 58
Providence Washington Insurance Company	9,314 30	10,182 86
Provident Mutual Life Insurance Company	35,074 22	36,790 32
Prudential Insurance Company of America	129,276 72	157,623 32
Queen Insurance Company of America	16,825 84	21,136 86
Queenland Insurance Company	1,132 40	1,143 56
Railroad Men's Mutual Life Insurance Company	----------	460 96
Reciprocal Exchange	811 96	1,002 94
Reliance Insurance Company of Philadelphia	1,653 38	1,983 14
Reliance Life Insurance Company	12,308 50	14,016 36
Reliance Marine Insurance Company	5 60	11 04
Republic Casualty Company	2,022 74	192 18
Republic Fire Insurance Company	2,641 90	4,144 08
Republic Insurance Company	13,261 96	11,038 70
Retailers Fire Insurance Company	----------	198 32
Retail Hardware Dealers Mutual Fire Insurance Company	778 90	904 86
Rhode Island Insurance Company	1,650 32	2,350 34
Richmond Insurance Company of New York	822 98	1,293 80
Ridgeley Protective Association	1,430 18	1,542 98
Riverside County Mutual Fire Insurance Company	233 22	307 12
Royal Exchange Assurance Company	5,285 64	4,040 18
Royal Indemnity Company	25,954 70	27,797 96
Royal Insurance Company	17,317 66	21,286 18
Sacramento County Patrons and Farmers Mutual Fire Ins. Co.	230 26	260 68
Safeguard Insurance Company	1,165 64	1,618 80
San Bernardino County Mutual Fire Insurance Company	430 00	513 50
San Diego County Mutual Fire Insurance Company	221 78	378 50
San Jose Abstract and Title Company	----------	536 00
Santa Barbara County Farmers Mutual Fire Insurance Company	350 68	452 36
Santa Clara County Fire Insurance Company	205 08	259 44
Scandinavian Mutual Protective Fire Insurance Association	1,236 94	924 28
Scottish Union and National Insurance Company	8,566 06	9,316 92
Sea Insurance Company, Limited	2,008 30	2,147 78
Security Insurance Company of California	6,470 04	11,441 72
Security Insurance Company (Conn.)	5,276 54	5,638 76
Security Life Insurance Company of America	1,605 36	2,032 82
Security Mutual Casualty Company	677 96	1,069 56
Security Title Insurance and Guarantee Company	2,141 78	3,340 90
Skandinavia Reinsurance Company, Limited	2,837 80	34
Sonoma County Farmers Mutual Fire Insurance Company	663 12	762 94
South British Insurance Company	2,559 36	2,630 70
Southern Surety Company	187 88	1,270 32
Southwestern Automobile Insurance Company	2,267 14	14,186 32
Springfield Fire and Marine Insurance Company	14,134 62	17,016 06
Sprinklered Risk Underwriters	157 24	127 32
Standard Accident Insurance Company	35,996 24	45,254 76
Standard Fire Insurance Company	909 88	960 04
Standard Marine Insurance Company, Limited	4,086 94	3,890 02
Star Insurance Company of America	1,368 56	1,695 90
State Assurance Company	1,362 98	1,902 12
State Life Insurance Company	16,341 32	20,111 10
Sterling Fire Insurance Company	1,979 60	2,205 42
St. Paul Fire and Marine Insurance Company	16,952 30	18,915 90
Stuyvesant Insurance Company of New York	2,252 02	2,884 54
Subscribers and Hardware Underwriters	171 36	375 18
Sun Indemnity Company of New York	----------	21 70
Sun Insurance Office of London	7,428 04	9,270 96
Superior Fire Insurance Company	3,045 08	4,823 02
Svea Fire and Life Insurance Company	5,956 58	6,125 46
Switzerland General Insurance Company, Limited	3,434 58	3,193 80
Thames and Mersey Marine Insurance Company	1,192 64	1,155 34
Title Guarantee and Trust Company	21,691 70	36,902 06
Title Insurance and Guaranty Company	7,366 06	10,102 54
Title Insurance and Trust Company	34,837 48	61,558 76
Tokio Marine and Fire Insurance Company, Limited	1,811 00	2,664 58
Town Dwelling Mutual Fire Insurance Company	171 92	201 26
Travelers Indemnity Company	5,590 84	6,472 24
Travelers Insurance Company	76,499 58	94,228 48
Underwriters Exchange	408 56	387 56
Union Assurance Society, Limited	6,201 66	7,510 66
Union Automobile Insurance Company	12,194 18	16,910 68

SCHEDULE Q—Concluded.

INSURANCE COMPANIES.

State Taxes Levied Against Insurance Companies for the Years 1923-1924.

Name of company	1923	1924
Union Central Life Insurance Company	$22,557 32	$19,238 06
Union Fire Insurance Company	919 12	1,155 72
Union Hispano Americano De Seguros, S. A.	1,285 80	841 92
Union Indemnity Company	3,327 42	7,282 90
Union Indemnity Exchange	6,432 52	6,838 42
Union Insurance Society of Canton, Limited	14,295 06	15,831 24
Union Marine Insurance Company	1,924 96	1,726 06
Union Mutual Life Insurance Company	3,820 26	3,534 76
Union Title Insurance Company	---------	2,853 90
United American Insurance Company	863 80	1,013 08
United Fireman's Insurance Company	1,946 96	2,074 10
United States Casualty Company	7,648 88	7,467 96
United States Fidelity and Guaranty Company	39,840 34	50,618 08
United States Fire Insurance Company	13,133 86	14,594 58
United States Lloyds, Incorporated	1,440 06	---------
United States Merchants and Shippers Insurance Company	---------	1,398 72
United States National Life and Casualty Company	---------	1,303 80
Universal Insurance Company	331 70	76 74
Universal Underwriters	---------	187 94
Urbaine Fire Insurance Company	9,330 66	14,975 10
Utah Home Fire Insurance Company	926 72	1,033 06
Ventura County Mutual Fire Insurance Company	608 98	799 10
Victory Insurance Company of Philadelphia	1,081 28	1,554 98
Warner's Inter-Insurance Bureau, Canners Exchange	928 24	2,450 74
Warner's Inter-Insurance Bureau, Wholesale Grocers Exchange	145 46	148 12
West American Insurance Company	20,174 90	14,214 56
Westchester Fire Insurance Company	7,548 88	9,321 46
West Coast Life Insurance Company	14,649 32	19,578 04
Western Assurance Company	4,662 90	3,968 10
Western Casualty Company	3,863 14	4,268 74
Western Reciprocal Underwriters	622 48	785 14
Western States Life Insurance Company	31,428 24	39,434 60
Western Title Insurance Company	331 94	746 12
Western Union Life Insurance Company	2,410 88	3,138 26
Woodman Accident Company	39 86	153 26
World Auxiliary Corporation	342 30	462 52
Yang Tsze Insurance Association, Limited	1,767 50	1,767 60
Yorkshire Insurance Company	3,323 76	3,955 50
Zurich General Accident and Liability Insurance Company	13,664 26	17,515 52
Totals	$2,641,404 84	$4,394,809 69

SPECIAL REPORT OF ADDITIONAL DATA ON RELATIVE TAX BURDENS REQUIRED UNDER SECTION 3664e, POLITICAL CODE.

THE AVERAGE BURDEN OF LOCAL TAXATION.

The average tax burden for the single year 1924 upon each $100 of actual value of property taxed for local purposes, all counties included, has been determined by this board to be $1.81 or 1.81 per cent.

This average tax burden is not the average of the tax rates applied to the assessed values of property, but represents the ratio of the total taxes of all kinds paid upon properties so taxed, as compared to the total value of all of the property of the state as determined by appraisement.

Property taxed in California on an ad valorem basis is not assessed at its full market value; in fact, is assessed on an average at a little less than 50 per cent of its market value.

In order to determine the percentage used for this purpose in the different counties, it was necessary, first to determine the actual value of selected properties in each county, for comparison with the assessment on the same property, after which the percentage thus determined was applied to the total assessed value of the county to determine the total actual value of the county. The actual values of the several counties were then totaled to arrive at the total actual value of all of the property in the state, this total actual value being necessary for comparison with the total amount of taxes of all kinds paid on such property to determine the percentage of tax burden or the amount of tax paid upon a given value of property.

SOURCES OF INFORMATION.

For the purpose of this determination, various sources of information were tested as to their reliability or otherwise, as an indication of the values of property.

1. *Information concerning sales of property in probate proceedings.*

This source was found to be of some value, but its value was limited because of the comparatively small number of sales of this kind within a period when they could be compared with a given assessment, or be reasonably supposed to have had little change in value, and also by the very limited distribution of the properties involved in such sales. Such information was useful in checking and verifying the larger and more widely distributed information secured by appraisements.

2. *Selling prices of property as indicated by the revenue stamps attached to the evidence of transfer, plus the face value of mortgages, et cetera, as shown by the records.*

This source of information was found of little value, for the reason that it early became apparent that the revenue stamps attached are

not a reliable index of the consideration realized in the sale, for the reason:

First—That it quite frequently happens that additional stamps are attached by buyers for speculation for the purpose of showing the prospective purchaser to whom they afterward attempt to sell the same property, a cost price to themselves which compares favorably with the price being asked.

Second—The law requiring that revenue stamps be placed upon deeds recites that a 50-cent stamp shall be attached for each $500 selling price represented, or portion thereof. It follows that in small sales a deed showing two 50-cent stamps may represent a consideration of $550 or $1,000, a variation of almost 100 per cent. Of course, this percentage would be less as the amount of the sale increased until in the very large sales the percentage would become negligible; but, taking the average consideration in all deeds filed over the state for a given day or period, the percentage of variation is so large as to render the data valueless, and eliminating all of the smaller deeds to avoid this objection would be manifestly unfair, as practically only one class of properties, the very extensive, would be represented in the survey.

Third—Many deeds evidence transfers representing the exchange of one property for another, rather than the sale of property for cash or for terms on a cash basis, and it is the rule, rather than the exception in such cases, that the parties to the transactions both put a price upon their properties for exchange purposes much in excess of what they would be willing to take cash, oftentimes double the cash price; the exchange being made by investigation of the two properties by the prospective purchasers and the deed showing the inflated exchange price. An attempt to eliminate these transactions is ineffective because while some of them indicate upon the evidence of transfer that an exchange of property is being made, a large percentage of them do not evidence the fact that such is true or that they are other than a bona fide sale.

Fourth—Since the law requires that stamps be attached to show only that portion of the selling price remaining after the encumbrance deduction, in all of those cases where mortgages are of record against the properties being sold, it becomes necessary to add to the selling price indicated by the stamps attached the value of the mortgage. And as mortgage records do not show partial payments upon such mortgages, it follows that taking the face value of the mortgage as shown by the record very frequently shows a much larger amount than remained unpaid on such mortgage, which the purchaser assumed, with the result that the aggregate of the selling price indicated by stamps, plus the mortgage, would show a consideration much in excess of that received.

Fifth—Under the California law the true consideration need not be, and usually is not, expressed in the deed; most deeds simply reciting a nominal consideration.

3. *Appraisement of selected property in various counties verified by check and comparison with the other sources.*

4. *Information upon relative values accumulated by the State Board of Equalization for its use in preparation for equalization and in the investigation of properties for classification and for report to legisla-*

ture, et cetera, together with conferences with real estate men, appraisers and others known to have a fair knowledge of values in the particular community under investigation, and statements from county assessors of the percentage attempted to be reached in fixing values for taxation.

CONSIDERATION OF PROPERTIES FOR APPRAISEMENT.

Those properties taxed upon an ad valorem basis for county and city purposes are valued for taxation by the county assessor, and his assistants, of the county in which the property is located.

For this purpose, the counties and cities are divided into districts, and a deputy assessor is assigned to each district. The deputy assessor lists for assessment all of the properties in his district, and places a value thereon. These assessment lists are then returned to the office of the assessor, and he exercises final judgment as to the values so fixed, but in a very large percentage of cases, whether the assessed value so fixed be changed or remain the same, it still follows that the judgment of the deputy assessor is reflected therein. This fact makes it necessary, in order to get a representative result by appraisement or otherwise, to so distribute the properties selected as to cover as many different districts as practical. Since these districts change and are divided or combined to keep pace with changing conditions, it was deemed advisable to make new selection of property to insure this representation.

SELECTION OF PROPERTY FOR APPRAISEMENT.

As a basis for the selection of properties to be appraised for this determination, the records were used to determine the percentage of all of the property of the state located in each county, and within that county the percentage of the property inside incorporated cities, and outside incorporated cities; and within incorporated cities, the percentage of property represented by real estate as distinguished from improvements, personal property, money and solvent credits.

The selections for appraisement were then made, so far as practical, to conform to these relative indications, but were varied by the selection of additional properties in any locality where it seemed necessary to do so in order to verify the data at first secured or to satisfy ourselves that the findings were actually representative of conditions existing there. With this information as a basis, the various localities, cities, and counties under consideration were visited and personal selections were made of the properties to be appraised, in order that it might be fairly distributed as to the different sections of the communities and fairly representative as to business property, residential property, improvements and vacant property, and as to the changing conditions within the locality so far as that could be ascertained.

Properties were selected and determinations made in counties which contain in the aggregate more than 90 per cent of the total of assessed value of property in the state. Normal or representative properties were at all times attempted to be selected. Any subdivision in which values had not become stable were avoided, as were properties having a peculiar indication of possible future values or sentimental values.

SELECTION OF APPRAISERS.

Since the data here presented necessarily involves the tax rate of banks, and many of the banks usually join in presenting opposing data whenever tax rates are under consideration, it was not considered advisable to procure appraisements from or through the banks.

The appraisers were therefore selected by the members of the State Board of Equalization, who did so by personal conference and inquiry as to the qualifications of each individual to be employed. Wherever practicable, appraisers were selected from realty operators or realty boards because of their familiarity with property values, or appraisers were secured for their experience as such, and in most instances no less than two were used in a given county, in order that their combined judgment might be had.

The list of properties to be appraised was then furnished the appraiser with direction that he fix his values thereon in accordance with his idea of the condition and value of the property on the first Monday in March immediately preceding; this date being selected for the reason that it marks the date upon which the tax attaches as a lien and the date to which the assessed values relate. These appraisements were then gone over carefully by said state board in comparison with the information secured from other sources, and where any considerable discrepancy was manifested a recheck of those particular pieces was made and verified.

VALUATIONS IN COUNTIES WHERE NO APPRAISEMENTS WERE MADE.

In the few small remaining counties where no appraisements were made the determination of the ratio of assessed to actual value, and thereupon the actual value of the property of such counties, was made upon information obtained by conference with real estate men, appraisers, bankers, and property owners having a knowledge of values therein.

These counties represent such a very small per cent of all of the property in the state, that an error of the widest probable margin in the determination of percentages therein would vary the average percentage of tax burden almost negligibly, in fact very much less than the range of possible difference that might occur on a new determination by the same methods for the entire state, using a different list of properties selected with equal care.

PERCENTAGES DETERMINED.

By comparison of the appraised value of the properties selected with the county assessed value of the same property percentages of assessed to actual value were determined for:

First—Improvements inside cities. *Second*—Real estate inside cities. *Third*—Improvements and real estate outside cities for each county. These percentages were then used against the total of the assessment within the county for the classes of property indicated to determine the total actual value for such property, and the totals of actual values so determined were combined to ascertain the total actual value of all property within the state.

The total amount of taxes levied in each county, including city, county, special road, special school, sanitary and all other special taxes which entered into the special tax rate, including all sums levied "for county and municipal taxation" was ascertained. This total of all taxes was then divided by the actual value of property to determine the average tax burden or average tax ratio.

REVISION AND VERIFICATION OF APPRAISEMENTS.

All appraisements were gone over carefully to cure as far as possible any discovered error, and all questionable items were verified as far as could be, by submitting them to the assessors or appraisers, or both, and by comparison with other information.

Only a very small percentage showed any considerable spread of difference over that shown by the other properties in the same counties. In these cases the apparent discrepancy was usually discovered to be a mistake in the location of the property, the appraisement of all of the improvements of a given property owner as against only a portion of the real estate of that property owner where a portion of such improvements were located upon and assessed with other real estate not appraised, or occasionally in the appraisements of improvements which were not in existence on the first Monday of March, or in the exact opposite case where improvements assessed and in existence on the first Monday of March had been removed and the appraisers did not discover that the removal had occurred after that date.

TABULATED STATEMENTS.

In the tabulated statements which follow in this report are set forth the data supporting the conclusions reached with respect to the average tax burden.

TOTAL AD VALOREM TAXES.

The total of all taxes collected by the cities and counties amounted to $219,468,369.70. This total is to be considered in connection with the total actual value of the property of the state as established by this investigation.

INCREASES AND DECREASES IN ASSESSMENT ROLLS.

The total assessment of property in this State of California, taxed upon an ad valorem basis, shows a value for the year 1924 of $12,123,970,808. This represents a total for the assessment rolls for the 58 counties of the state (not including operative property). This property is segregated into the following classes: Land, improvements, personal property, money and credits.

1924 ROLLS ANALYZED.

The total of the combined assessment rolls of all of the counties of the state for the year 1924 showed an increase of assessed value over that of the preceding year of 17.01 per cent. This percentage is the result of the net figure, the total of gains in some counties over losses in others, forty-nine counties showing an increase and the remaining nine counties showing a decrease.

Investigation disclosed that these decreases were confined to the smaller counties and were only slight. It also showed that such decreases resulted from the falling off of actual value of certain classes of property, notably livestock. Some of the counties show a greatly reduced number of this class of property for the year 1924.

COMPARATIVE INCREASES.

An analysis of these increases for the year 1924 shows as usual that improvements increase more rapidly than does land with personal property varying between increases and decreases dependent upon conditions. The reason for this larger increase in improvements is manifest, since practically all of the landed property of the state is already upon the assessment rolls and the only increases that occur are normal increases in value, while erection of new improvements brings into being new properties and new property value. The depreciation allowed upon existing improvements in fixing the assessed value thereon will allow but a small percentage of the total value of new improvements to be reflected in this percentage of increase.

FIRE INSURANCE.

An attempt is sometimes made to compare the outstanding fire insurance in the state with the assessment upon the classes of property usually insured, for the purpose of showing an indication of the ratio of assessed to actual values upon such property, especially improvements.

The best tabulation that could be made in such a comparison would be so far short of an accurate or a complete showing that it would hardly be fair to offer it as proving or even indicating anything in this connection.

The difficulty arises from the fact that under the tax system of California, a large percentage of properties usually insured can not be assessed—are not assessable. This class of nonassessable properties includes growing crops insured, matured insured crops in storage, which crops were grown and harvested after assessment time, fire insurance on vessels and cargoes (vessels of more than 50 tons burden not assessable in California), church, college, school and other public properties not assessable, all improvements of public service utilities not taxed on an ad valorem basis, including railroad terminals, depots, warehouses and other buildings, power houses, rolling stock, equipment, et cetera, gas plants, stores, et cetera.

Before a comparison could be made of these items there would have to be deducted from the latter amount the value of personal property not ordinarily insured, which value could only be arrived at by a very indefinite estimate, and then it would be necessary to assume that all of the other properties within the state were insured. There would also have to be deducted from the various items of insurance in force the total of all insurance outstanding against all of the properties not assessed or not assessable.

The inevitable inaccuracy of the computation is so apparent that any results that might be reached are not shown, the matter being mentioned to call attention to its lack of value.

1924—INSIDE PROPERTIES—COUNTIES APPRAISED.

(Table shows separate percentage assessed to actual value of real estate and improvements.)

County	Real estate appraised	Real estate assessed	Real estate, per cent	Appraised improvements	Assessed improvements	Improvements, per cent
Alameda	$7,082,120	$3,330,400	.4702	$2,421,700	$1,023,350	.4225
Butte	401,020	226,235	.5641	552,950	237,000	.4286
Colusa	56,000	26,500	.4732	153,000	72,900	.4764
Contra Costa	100,800	45,910	.4554	260,500	106,975	.4106
Fresno	3,643,800	1,481,105	.4064	1,208,900	718,125	.5940
Glenn	51,725	20,325	.3929	135,000	57,000	.4222
Humboldt	273,450	133,265	.4873	379,500	181,870	.4761
Imperial	210,600	78,815	.3742	359,650	173,610	.4827
Kern	1,003,305	579,725	.5778	1,227,650	557,940	.4544
Kings	128,750	56,010	.4350	239,800	54,000	.2251
Los Angeles	23,935,064	13,705,327	.5726	11,789,575	5,250,420	.4453
Marin	276,350	118,485	.4287	197,950	99,950	.5049
Mendocino	95,000	37,680	.3966	115,900	64,630	.5576
Monterey	280,700	124,350	.4429	461,500	201,900	.4374
Napa	159,100	92,300	.5801	307,500	195,300	.6351
Orange	865,000	269,685	.3117	359,250	137,300	.3821
Riverside	561,700	138,360	.2463	624,825	282,440	.4520
Sacramento	5,173,700	2,611,250	.5047	3,776,550	2,199,950	.5825
San Bernardino	693,300	266,580	.3845	481,000	149,080	.3099
San Diego	4,490,300	1,328,945	.2959	1,037,850	201,860	.1944
San Francisco	48,365,430	23,314,130	.4820	28,748,570	13,585,600	.4725
San Joaquin	1,184,125	444,040	.3749	1,032,000	394,425	.3821
San Mateo	665 740	256,700	.3855	45,000	18,300	.4066
Santa Clara	1,305,000	667,685	.5116	974,500	364,265	.3737
Shasta	46,200	20,000	.4329	80,150	40,155	.5009
Siskiyou	10,125	5,025	.4962	61,100	29,115	.4765
Solano	211,500	61,150	.2891	220,000	118,350	.5379
Sonoma	558,050	147,325	.2639	675,150	216,250	.3202
Stanislaus	361,000	127,265	.3525	616,200	225,150	.3653
Tehama	67,825	31,375	.4625	145,990	70,750	.4846
Tulare	39,590	22,420	.5663	89,550	58,100	.6487
Yolo	128,200	51,950	.4052	235,200	161,080	.6848
Yuba	235,600	131,790	.5593	277,350	159,080	.5735
Totals	$102,660,219	$49,952,107	----------	$59,291,710	$27,406,220	----------

1924—INSIDE REAL ESTATE—COUNTIES APPRAISED.

(Table shows assessed value increased to actual value. Percentage from Table. 1.)

County	Total assessment of real estate	Assessment ratio	Total actual value, real estate
Alameda	$146,626,700	.4702	$311,839,004
Butte	3,490,560	.5641	6,187,839
Colusa	621,810	.4732	1,314,053
Contra Costa	11,682,370	.4554	25,652,986
Fresno	23,978,765	.4064	59,002,866
Glenn	861,946	.3929	2,193,805
Humboldt	5,108,680	.4873	10,483,644
Imperial	4,496,205	.3742	12,015,513
Kern	7,922,840	.5778	13,712,080
Kings	1,320,465	.4350	3,035,551
Los Angeles	1,105,775,590	.5726	1,931,148,429
Marin	6,395,460	.4287	14,918,264
Mendocino	1,508,975	.3966	3,804,778
Monterey	4,387,705	.4429	9,906,762
Napa	2,550,635	.5801	4,396,888
Orange	25,781,200	.3117	82,711,581
Riverside	7,733,260	.2463	31,397,726
Sacramento	36,678,190	.5047	72,673,251
San Bernardino	14,279,570	.3845	37,138,023
San Diego	45,781,010	.2959	154,717,843
San Francisco	309,902,590	.4820	642,951,358
San Joaquin	18,389,930	.3749	49,052,894
San Mateo	10,042,945	.3855	26,051,738
Santa Clara	19,509,750	.5116	38,134,773
Shasta	555,470	.4329	1,283,136
Siskiyou	556,255	.4962	1,121,029
Solano	2,550,380	.2891	8,821,791
Sonoma	4,237,085	.2639	16,055,646
Stanislaus	4,399,810	.3525	12,481,730
Tehama	685,915	.4625	1,483,059
Tulare	3,906,540	.5663	6,898,357
Yolo	954,975	.4052	2,356,799
Yuba	2,352,640	.5593	4,206,400
Totals	$1,835,030,721	----------	$3,599,149,596

1924—INSIDE PROPERTIES—COUNTIES APPRAISED.

(Table shows assessed value increased to actual value. Percentage from Table 1.)

County	Total assessment of improvements	Assessment ratio	Total actual value of improvements
Alameda	$100,127,005	.4225	$236,986,994
Butte	3,659,940	.4286	8,539,290
Colusa	963,275	.4764	2,021,987
Contra Costa	12,846,715	.4106	31,287,664
Fresno	20,356,865	.5940	34,270,816
Glenn	1,041,965	.4222	2,467,941
Humboldt	4,377,345	.4761	9,614,251
Imperial	4,471,225	.4827	9,262,948
Kern	6,517,065	.4544	14,342,132
Kings	1,705,080	.2251	7,574,766
Los Angeles	506,392,065	.4453	1,137,103,222
Marin	5,581,970	.5049	11,055,595
Mendocino	1,742,640	.5576	3,125,251
Monterey	4,036,610	.4374	9,228,646
Napa	3,410,485	.6351	5,369,996
Orange	16,485,180	.3821	43,143,627
Riverside	10,865,760	.4520	24,039,292
Sacramento	28,727,780	.5825	49,318,077
San Bernardino	11,767,610	.3099	37,972,281
San Diego	15,936,655	.1944	81,978,677
San Francisco	252,725,618	.4725	534,869,032
San Joaquin	18,456,075	.3821	48,301,688
San Mateo	8,098,925	.4066	19,918,654
Santa Clara	20,391,490	.3737	54,566,470
Shasta	4,069,385	.5009	2,134,927
Siskiyou	1,347,725	.4765	2,828,384
Solano	5,480,310	.5379	10,188,343
Sonoma	6,407,400	.3202	20,010,718
Stanislaus	5,925,790	.3653	16,221,708
Tehama	1,357,035	.4846	2,802,319
Tulare	6,982,650	.6487	10,764,066
Yolo	2,173,670	.6848	3,174,167
Yuba	3,026,745	.5735	5,277,672
Totals	$1,094,626,053	.....	$2,489,761,501

1924—INSIDE PROPERTY—COUNTIES APPRAISED.
PERSONAL PROPERTY, MONEY AND CREDITS INCREASED TO ACTUAL VALUE.

(Table shows personal property, money and solvent credits increased to actual value.)

County	Assessed value	Ratio	Actual value
Alameda	$55,347,281	.4463	$124,013,625
Butte	2,097,805	.4963	4,226,888
Colusa	620,019	.4748	1,305,852
Contra Costa	7,709,095	.4330	19,569,563
Fresno	11,834,045	.5002	23,658,626
Glenn	637,715	.4075	1,564,944
Humboldt	2,982,711	.4817	6,192,651
Imperial	3,213,451	.4284	7,501,052
Kern	3,842,025	.5161	7,444,342
Kings	1,263,445	.3300	3,828,067
Los Angeles	365,472,765	.5089	718,162,242
Marin	1,254,085	.4668	2,686,557
Mendocino	1,581,062	.4771	3,315,158
Monterey	2,226,235	.4401	5,058,475
Napa	1,589,450	.6076	2,615,947
Orange	15,449,615	.3469	44,536,220
Riverside	2,808,530	.3491	8,045,058
Sacramento	13,096,470	.5436	24,092,108
San Bernardino	4,400,465	.3472	12,674,150
San Diego	12,251,573	.2451	49,986,026
San Francisco	121,039,130	.4772	253,644,446
San Joaquin	8,389,845	.3785	22,166,036
San Mateo	2,166,140	.3960	5,470,050
Santa Clara	7,901,090	.4426	17,851,536
Shasta	908,045	.4669	1,944,838
Siskiyou	766,455	.4863	1,576,095
Solano	1,861,950	.4135	4,502,923
Sonoma	2,322,710	.2920	7,954,486
Stanislaus	3,668,730	.3589	10,222,151
Tehama	899,300	.4735	1,899,260
Tulare	3,312,830	.6075	5,453,218
Yolo	919,865	.5450	1,687,458
Yuba	1 423,800	.5664	2,513,771
Totals	$665,258,143	.....	$1,407,363,219

1924—OUTSIDE PROPERTIES—COUNTIES APPRAISED.

(Table shows percentage of assessed to actual value and assessed value increased to full value.)

County	Appraisement total	Assessment total	Per cent	Total assessed value	Total actual value
Alameda	$1,291,171	$531,775	.4118	$27,811,981	$67,537,593
Butte	1,775,290	748,295	.4215	27,432,468	65,082,960
Colusa	1,152,902	526,616	.4567	19,551,467	42,810,306
Contra Costa	1,054,597	419,515	.3977	53,794,380	135,263,716
Fresno	1,869,650	1,047,975	.5605	115,614,087	206,269,557
Glenn	450,497	249,856	.5546	20,460,518	36,892,387
Humboldt	854,394	409,540	.4793	39,441,590	82,289,985
Imperial	1,559,650	653,420	.4189	29,770,463	71,068,185
Kern	1,047,156	458,415	.4377	138,948,415	317,451,256
Kings	784,684	270,785	.3450	21,486,144	62,278,678
Los Angeles	10,499,622	3,836,440	.3653	397,540,135	1,088,256,597
Marin	725,570	329,455	.4540	12,097,440	26,646,343
Mendocino	501,600	202,100	.4029	21,481,490	53,317,175
Monterey	1,243,120	576,675	.4638	28,858,009	62,220,804
Napa	1,364,562	693,150	.5079	14,422,625	28,396,583
Orange	4 687,900	1,696,940	.3619	96,528,895	266,728,087
Riverside	433,225	135,740	.3133	23,244,510	74,192,499
Sacramento	2,517,780	1,290,100	.5123	45,505,327	88,825,545
San Bernardino	684,980	222,380	.3246	35,767,110	110,188,262
San Diego	225,950	87,545	.3874	14,455,113	37,313,146
San Joaquin	1,191,895	497,105	.4170	56,936,199	136,537,647
San Mateo	2,414,275	952,000	.3943	19,027,895	48,257,405
Santa Clara	1,893,825	694,735	.3668	56,784,017	154,809,206
Shasta	230,178	85,535	.3716	13,599,425	36,596,945
Siskiyou	345,450	163,140	.4722	18,357,885	38,877,350
Solano	464,970	225,015	.4839	20,430,378	42,220,247
Sonoma	922,275	267,590	.2901	30,249,945	104 274,198
Stanislaus	1,011,715	368,506	.3642	39,353,620	108,054,969
Tehama	591,489	304,530	.5148	14,186,750	27,557,789
Tulare	868,446	510,230	.5875	54,774,530	93,233,242
Yolo	1,526,226	515,430	.3377	22,878,880	67,749,126
Yuba	849,065	435,977	.5134	10,147,780	19,765,835
Totals	$47,034,109	$19,406,504	----------	$1,540,939,471	$3,800,963,623

1924—COUNTIES NOT APPRAISED.

(Table shows per cent assessed to actual value and assessed value increased to actual value all property.)

County	Total assessed value	Per cent	Total actual value
Alpine	$720,842	.70	$1,029,774
Amador	6,730,720	.60	11,217,881
Calaveras	7,393,020	.55	13,441,854
Del Norte	10,418,670	.55	18,943,036
El Dorado	10,232,445	.50	20,464,890
Inyo	11,403,095	.60	19,005,158
Lake	6,998,280	.45	15,551,733
Lassen	13,118,732	.60	21,864,553
Madera	22,083,700	.40	55,209,250
Mariposa	4,636,098	.65	7,132,458
Merced	32,215,481	.45	71,589,957
Modoc	7,770,405	.45	17,267,566
Mono	2,450,380	.50	4,900,760
Nevada	7,035,320	.60	11,725,533
Placer	15,174,820	.35	43,356,628
Plumas	12,660,590	.70	18,086,557
San Benito	13,185,665	.45	29,301,477
San Luis Obispo	33,194,845	.46	72,162,706
Santa Barbara	57,109,525	.40	142,773,812
Santa Cruz	22,286,515	.50	44,573,030
Sierra	2,921,495	.50	5,842,990
Sutter	17,943,180	.55	32,623,963
Trinity	3,373,835	.60	5,623,058
Tuolumne	8,924,285	.60	14,873,808
Ventura	51,268,175	.40	128,170,437
Totals	$381,250,127	----------	$826,732,869

SUMMARY.

ACTUAL VALUE, ALL PROPERTY.

Value Inside, Improvements, etc.	$2,489,761,501
Value Real Estate Inside	3,599,149,596
Value Personal Property, Money and Solvent Credits Inside	1,407,363,219
Value Outside (Counties appraised)	3,800,963,623
Value Outside (Counties not appraised)	826,732,869
Grand Total Actual Value, all property	$12,123,970,808

AVERAGE RATIO.

AVERAGE RATIO ASSESSED TO ACTUAL VALUE.

Total Assessment, all property	$5,517,104,515
Total Actual Value, all property	12,123,970,808
Average Per Cent Assessed to Actual Value	.4550%

AVERAGE TAX BURDEN.

Total all taxes (county, city and district)	$219,468,369
Total Actual Value, all property as determined	12,123,970,808
Average Tax on $100 Actual Value	1 81 +

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SECOND BIENNIAL REPORT

OF THE

Department of Institutions

OF THE

STATE OF CALIFORNIA

Two Years Ending June 30, 1924

CALIFORNIA STATE PRINTING OFFICE
FRANK J. SMITH, Superintendent
SACRAMENTO, 1924

35332

DEPARTMENT OF INSTITUTIONS

OF THE

STATE OF CALIFORNIA.

EXECUTIVE OFFICE

Forum Building, Sacramento, California.

W. D. WAGNER ..... Director
E. G. TWOGOOD ..... Secretary

INDUSTRIAL HOME FOR THE ADULT BLIND

Oakland, California.

DOUGLAS KEITH ..... Superintendent
M. S. GILCHRIST ..... Secretary

INDUSTRIAL FARM FOR WOMEN

Sonoma, California.

..... Superintendent
..... Secretary

CALIFORNIA SCHOOL FOR GIRLS

Ventura, California.

DR. OLIVE P. WALTON ..... Superintendent
MISS F. STELLA MCCUSKEY ..... Secretary

WHITTIER STATE SCHOOL

Whittier, California.

F. C. NELLES ..... Superintendent
ELMER KNOX ..... Secretary

PRESTON SCHOOL OF INDUSTRY

Waterman, California.

O. H. CLOSE ..... Superintendent
JOHN WAKEFIELD ..... Secretary

SONOMA STATE HOME

Eldridge, California.

DR. F. O. BUTLER ..... Superintendent
J. J. SASSENRATH ..... Secretary

PACIFIC COLONY

Spadra, California.

..... Superintendent
..... Secretary

AGNEWS STATE HOSPITAL.

Agnew, California.

DR. LEONARD STOCKING ..... Superintendent
MRS. RHODA E. LOVE ..... Secretary

MENDOCINO STATE HOSPITAL

Talmage, California.

DR. DONALD R. SMITH ..... Superintendent
J. E. THOMPSON ..... Secretary

NAPA STATE HOSPITAL

Imola, California.

DR. J. M. SCANLAND ..... Superintendent
R. E. JEFFREY ..... Secretary

NORWALK STATE HOSPITAL

Norwalk, California.

DR. EDWIN WAYTE ..... Superintendent
L. E. MCDONALD ..... Secretary

SOUTHERN CALIFORNIA STATE HOSPITAL

Patton, California.

DR. JNO. A. REILY ..... Superintendent
MRS. IDA K. MOISAN ..... Secretary

STOCKTON STATE HOSPITAL

Stockton, California.

DR. FRED P. CLARK ..... Superintendent
GEO. A. BROWN, JR. ..... Secretary

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LETTER OF TRANSMITTAL.

SACRAMENTO, CALIFORNIA, September 1, 1924.

HON. FRIEND WM. RICHARDSON,
Governor of California,
Sacramento, California.

DEAR SIR: In compliance with provisions of the statutes, I have the honor to submit herewith my report as Director of Institutions for the biennium ending June 30, 1924.

On September 10, 1922, Dr. John A. Reily, Director of Institutions, resigned and the work of the Department was carried on by Mr. E. G. Twogood, as acting director, until October 10, 1923, when by your appointment I assumed the office.

In assuming the position, I did so with a sincere desire to be of some service to the state and to humanity. In conducting this department, I have endeavored to do so in an economical manner, but careful that it should be constructive economy and not destructive.

POPULATION IN STATE INSTITUTIONS.

There has been the usual steady increase in the population of the various institutions, especially in state hospitals for the insane. It is gratifying, however, to note that, notwithstanding the large increase in the population of the state, the percentage of increase in the hospitals has not been so great as during the previous biennium. On June 30, 1922, there were 11,291 patients in the six state hospitals; on June 30, 1924, there were 11,637 patients, an increase of only 346, or about 3 per cent, while the increase for the previous biennium was 936, or about 9 per cent. The increase in admissions during the biennial period ending June 30, 1922, was approximately 7 per cent; during the last biennium the increase was approximately 4½ per cent. The lowering of the percentage of increase for the biennium just ended is therefore not altogether due to decrease in admissions but is rather the result of increased vigilance on the part of the hospital authorities and the deportation bureau of this department in returning to their respective states and countries nonresidents and aliens who have no legal residence in California. The importance of this work can not be too greatly stressed, and it is to be hoped that sufficient funds will be appropriated by the coming legislature to carry on the work even to a higher degree.

CAPACITY OF HOSPITALS.

On another page appears a table showing the capacity and population of the several hospitals, and from this statement it will be seen that on July 1, 1924, the combined normal capacity of all the hospitals was 10,394, and the total population was 11,637, or an excess of 1243. This condition was caused partly by the practical destruction by an earthquake of the large building at Patton housing nearly 600 patients. However, the condition is fast being remedied. During the past two years there have been completed new buildings sufficient to accommo-

date an additional population of 1276, and additional buildings are now under construction sufficient to accommodate 260 more. We hope the legislature will be able to appropriate funds for sufficient additional buildings so that the crowded condition will be entirely overcome.

It is my opinion that no state hospital should accommodate more than 2500 patients, and this opinion is shared by all the superintendents of the hospitals. A larger population becomes unwieldy, and it is not thought that as good care can be given. Economy in the support and maintenance of an institution on account of numbers will come up to a certain point, but to go beyond that point, which we have placed at 2500, will not prove economical.

Three of our hospitals, viz, Napa, Stockton, and Southern California, have now reached that point, and I believe that what additional capacity is provided should be at Mendocino, Agnews and Norwalk.

BUILDING IMPROVEMENTS.

During the past two years many splendid improvements have been made. Among them are the following:

Agnews State Hospital.

A splendid two-story reinforced concrete building to house 80 employees.

Napa State Hospital.

A fine two-story reinforced concrete building to house 120 male patients.
A one-story building to accommodate 80 female patients.
Two large fireproof buildings used for industrial therapy.

Mendocino State Hospital.

Five wards in the main building have been completely remodeled, making them light, airy and in every way modern.

At the present time there is under construction a receiving and treatment building to accommodate 60 patients.

Norwalk State Hospital.

Four two-story reinforced concrete buildings to accommodate 516 patients.
Boiler plant remodeled and capacity practically doubled.

Stockton State Hospital.

Reinforced concrete psychopathic building to accommodate 120 patients.
Two reinforced concrete buildings at the farm to accommodate 200 patients.

Southern California State Hospital.

One two-story and four one-story buildings accommodating 440 patients.

Sonoma State Home.

Reinforced concrete assembly hall to seat 1438 persons.
Reinforced concrete school building containing six schoolrooms, including domestic science.
Two buildings to accommodate nurses and attendants.
One cottage to accommodate 60 girls.
Two additional cottages are now under construction. These will accommodate 160 patients.

Whittier State School.

A beautiful auditorium to seat 600 persons.
Two cottages accommodating 90 boys.

Preston School of Industry.

A new laundry building, and a new machine and automobile shop. A large percentage of this work was done by the boys of the school.

Planing mill, and carpenter shop remodeled.

One cottage for 45 boys.

Industrial Home for the Adult Blind.

A building to accommodate employees.

A new industrial building which is light and airy and well equipped. Heretofore, the inmates were compelled to work in an old, dark and dangerous frame building.

A new modern boiler house, a smoking and lounging room for male inmates, and an assembly and amusement hall.

This is the first year the inmates of this home ever had modern steam heat for their buildings; the first time they ever had an assembly hall where they could congregate to listen to music and the radio which has been installed, and the first time the men had any place other than outdoors or in their rooms to sit and smoke during the evening. They are improvements which should have been made years ago.

Many other improvements have been made, but the above refers to new buildings only.

PER CAPITA COST OF MAINTENANCE.

By reference to tables printed elsewhere in this report, it will be seen that the per capita cost of the total maintenance of each institution has been materially reduced, the greatest reduction being in the cost of salaries and wages.

This has been accomplished not at the expense of the wards of the state, for they have been better housed, have been given more comforts and amusements, have been as well clothed and fed, and have been given as good medical care and attention—perhaps better, for much new equipment has been purchased. But the lower per capita is due to the elimination of many unnecessary positions, better cooperation between institutions, better coordination, and above all to the improvement of and larger production from the farms, orchards, dairies, hog and poultry plants.

The average per capita cost for maintenance of all the institutions in this department (eliminating the Farm for Women and Pacific Colony, which were closed) for the seventy-fifth fiscal year (ending June 30, 1924) was $277.10, while for the seventy-fourth fiscal year (ending June 30, 1923) it was, for the same institutions, $298.81. On an average population of 14,091, which was the population during the past year, this resulted in an actual saving to the state of $307,324.71.

The above does not include expenditures for new buildings, nor does it take credit for the $2,578,911.98 revenue by the institutions and paid into the state treasury; but is the total gross expenditure for all maintenance and support.

COLLECTIONS AT STATE HOSPITALS.

The collections for the contingent funds of the state hospitals for the insane for the year ending June 30, 1923, show an increase of approximately $50,000 over the previous year, as will be seen by the tables appended hereto. The collections for the biennium ending June 30, 1924, however, are approximately $10,000 less than the collections for the previous biennium. This is due to the fact that a large number of

U. S. Veterans' Bureau patients were removed from the state hospitals to the U. S. Veterans' Hospital at Palo Alto, California. The most marked effect of this removal will be seen in the report of the Mendocino State Hospital, as about 250 Veterans' Bureau patients were removed from this hospital.

The total collections for the contingent funds of the six state hospitals amounted to $1,158,239.86. The total revenue paid into the state treasury on account of this department during the biennium amounted to $2,578,922.98.

There was collected by this department for commitment and transportation expenses during the biennium the sum of $22,860.55, an increase of $3,594.94 over the previous two years.

FARMING OPERATIONS.

It was unfortunate that when most of our institutions were established the idea seems to have been prevalent that the function of an institution was merely custodial, with the result that, while large acreages were purchased, in many instances the soil was of very poor quality and of little value for agricultural purposes, and at the time little regard was paid to securing an ample supply of water. Since then, however, this condition has been very greatly remedied by the purchase by the state of many acres of splendid agricultural land.

At nine of the institutions in this department are maintained dairies, poultry yards and hog ranches. Vegetable gardens are maintained at all of them. Many acres of orchards have been and are being planted. It is my hope and aim that soon all the vegetables, fruit, milk, eggs, ham and bacon consumed in our institutions will be produced on our own farms. It will provide better food and wholesome occupation for many of the wards of the state, and will be an economy worth while.

The last year was one of the least rainfall the state has ever known, and, owing to the failure of the state to secure an ample original water supply as above referred to, it was necessary for this department to expend many thousands of dollars to augment the water supply, not only for agricultural purposes, but in some instances for domestic use. But while some of our crops were short, yet none of our orchards were damaged nor did any institution actually suffer for want of water. Notwithstanding the shortage of some of our crops, the institutions in this department produced during the year ending June 30, 1924, vegetables to the amount of 5,131,949 pounds; 320,951 pounds of pork; 672,911 gallons of milk; 1,773,465 eggs. The total products of the farms during the one year amounted in value to $701,275.31 at wholesale prices. The cost of production of this is all included in the statement showing the cost of maintenance of the various institutions.

All of the above products are consumed at the institutions and materially reduce the state's cost of maintenance.

INDUSTRIAL FARM FOR WOMEN.

While the original appropriation for this institution was made in 1919, it was not until January, 1922, that the farm was formally opened. A few commitments were made, but room was limited, as no buildings other than the one purchased with the property had been

provided, and naturally the per capita was exceedingly high. Money for a hospital building was appropriated by the legislature of 1921 and this building was completed early in 1923 with a capacity of about thirty-six patients. In March, 1923, the main building which had been purchased with the property was destroyed by fire. As many of the inmates as could be housed in the hospital building were taken care of there and the remainder were transferred to Sonoma State Home and to Napa State Hospital. The legislature of 1923 made no appropriation for the farm, aside from one for the services of a caretaker, and the institution therefore was closed on June 30, 1923, after the few remaining inmates had been paroled and discharged.

This is called the "Industrial Farm," but it is a misnomer. There are in the entire place not to exceed thirty acres of farming land, and even that is not of the best. It is situated in the foothills, and if intended merely as a custodial institution,, would be admirably located, but as a farm it is of little value.

Through the Department of Public Works, we have been investigating the supply of water to ascertain, if possible, how large an institution could be maintained at this place. So far the department has been unwilling to report that sufficient water can be developed to maintain an institution even with a population as small as 200 inmates.

Considering the population of the state and its steady increase, it would be unwise and uneconomical to establish this "farm" or any other state institution in any location which would be incapable of caring for a population of at least 2000 persons. To do so would place an unnecessary and unjustifiable burden on the state.

NOTE.—Since the above was written, the buildings at the Industrial Farm for Women have been taken over by the Sonoma State Home, and an epileptic colony has been established under the management of the home, where we are now caring for fifty patients.

PACIFIC COLONY.

This institution was opened for the reception of inmates on March 20, 1921, with one building having a capacity of about fifty patients. A number of boys were transferred from the Sonoma State Home and Whittier State School to the colony, and a few were subsequently committed. Owing to the lack of sufficient water supply, no further development of the site was attempted, and on account of the high per capita cost, due to the small number of inmates, recommendation was made in the last report that the institution be closed until such time as it might be developed on another site, with greater capacity. This procedure was followed and on January 15, 1923, the nineteen inmates who still remained were transferred to Sonoma State Home, and Pacific Colony was closed. Subsequently the buildings and about twenty acres of land were leased to the Welfare Association of Los Angeles, who have been conducting a school for boys since that time.

NOTE.—Since the above was written it has been determined to develop Pacific Colony on the 200-acre tract situated near Walnut, California, and building plans are under way. It is probable that the institution will be ready to receive inmates about October, 1925.

PRIVATE SANATORIUMS.

The statutes provide that "no person, association, or corporation, must establish or keep an institution for the care, custody or treatment

of the insane, alleged insane or other incompetent persons referred to in this act for compensation or hire, without first obtaining a license therefor from the commission." (Department.)

The law also provides that the department may examine and supervise these institutions and may for cause amend or revoke the license.

There are now some fifty of these private institutions licensed by this department. I believe there are others that should be licensed. No license fee whatever is paid by these private institutions. In other states they are required to pay a license fee and should be required to do so in this state. Some provision should also be made so as to enable this department to exercise more and better supervision than has been possible in the past.

ASSISTANCE FROM OUTSIDE AGENCIES, SOCIETIES AND INDIVIDUALS.

During the past biennium various societies and individuals have rendered valuable aid and contributed generously to the comfort and amusement of the wards of the state in the different institutions.

I desire to make especial mention of the "Jewish Committee for Personal Service in State Institutions." This committee, through their secretary, visits the institutions and confers with members of the medical staff. They have taken many patients of their religious belief out of the institutions and found them good homes.

The Knights of Columbus visit the institutions regularly and leave for the use of the ex-service patients such personal luxuries as candy, cigars and cigarettes.

The Los Angeles County authorities have been extremely cooperative. Mrs. Jean G. McCracken, psychopathic parole officer of that county, has been of invaluable service to the superintendents of both the Southern California and Norwalk State hospitals. The Psychopathic Society, the county hospital and the county farm have all been most helpful.

Mrs. W. S. James of Los Angeles has always taken a very great interest in the Norwalk State Hospital, and only recently had installed at her own expense four complete sets of radio, which were placed in four of the buildings for patients.

Dr. Eva C. Reid, who at one time was a member of the staff of this department, although not now connected with the institutions, has continued to render most valuable aid in after-care work.

The P. E. O. sisterhoods of Alhambra, Glendale and Burbank, and the J. O. C. Class of the Presbyterian Church of Santa Monica have been very helpful to the California School for Girls.

The Rotary, Lions and Kiwanis clubs, the Y. M. C. A. and the district office of the Boy Scouts have all taken a great interest in the boys of Whittier and have assisted materially in the great work Superintendent Nelles has to do. A notable assistance to the school comes from the Whittier Dentists' Association, who contribute one hour each week for emergency dental cases.

To all the above I desire at this time to express my thanks and appreciation for the interest shown.

SUPERINTENDENTS.

During my incumbency of this office there has been but one change in the office of superintendent at any of the institutions in this department. On July 1, 1924, Dr. C. F. Appelgate resigned as superintendent of the Norwalk State Hospital, and Dr. Edwin Wayte, who had been first assistant physician at the Southern California State Hospital for many years, was appointed to fill the vacancy.

I have received splendid cooperation from all of them and the success of this department is and will continue to be due entirely to the assistance received from them and their business managers.

Reports of the various superintendents and tables of statistics are attached hereto.

Respectfully submitted.

W. D. Wagner,
Director of Institutions.

FINANCIAL STATEMENTS.

Statement of Income and Expenditures (July 1, 1922, to June 30, 1923), Department of Institutions.

Seventy-fourth Fiscal Year.

INCOME.

Appropriations			$8,111 12
Travel and contingent—Chapter 905-1921		$2,491 39	
Printing—Chapter 905-1921		5,244 73	
Travel and contingent, dental surgeon—Chapter 905-1921		375 00	
Institutions pro rata			36,335 00
Agnews State Hospital		$3,986 00	
California School for Girls		1,366 20	
Industrial Farm for Women		363 40	
Industrial Home for the Adult Blind		454 00	
Mendocino State Hospital		2,743 40	
Napa State Hospital		5,570 16	
Norwalk State Hospital		2,161 92	
Pacific Colony		497 80	
Preston School of Industry		2,358 12	
Sonoma State Home		4,134 92	
Southern California State Hospital		4,807 12	
Stockton State Hospital		5,860 80	
Whittier State School		2,031 16	
Excess accumulated income, forwarded from seventy-third fiscal year			61 99
Total income			$44,508 11

EXPENDITURES.

Current year expenditures, as follows		$30,414 42	
Materials and supplies	$366 15		
Salaries and wages	22,093 68		
Service and expense	7,770 90		
Property and equipment	183 69		
Prior year's expense		51 49	
Total expenditures			$30,465 91
Excess accumulated income, seventy-fourth fiscal year			$14,042 20

Status of Control Ledger Balances (As at June 30, 1923).

Seventy-fourth Fiscal Year

FUNDING GROUP.

Available appropriated funds	$764 49	Appropriations—	
		Deportation of insane, 415-1919	$0 39
		Travel and contingent, 905-1921	8 66
		Printing, 905-1921	755 44
Total	$764 49	Total	$764 49

PROPRIETARY GROUP.

Warrants receivable	$689 52	Claims filed	$689 52
Property and equipment, per inventory July 1, 1922	4,986 28	Accountability for property and equipment	4,986 28
Cash revolving fund, general	500 00	Revolving Fund liability to emergency Resolution No. 1	1,000 00
Cash revolving fund, deportation	575 31	Excess accumulated income, Seventy-fourth fiscal year (per statement)	14,042 20
Accounts receivable, institutions, deportation expense	424 69		
Support, etc., Fund	13,542 20		
Total	$20,718 00	Total	$20,718 00

Statement of Income and Expenditures (July 1, 1923, to June 30, 1924).

Seventy-fifth Fiscal Year

INCOME.

Appropriations			$49,871 21
Printing—Chapter 905-1921		$5 85	
Support—Chapter 121-1923		3,994 30	
Salaries—Chapter 121-1923		18,032 61	
Deportation—Chapter 121-1923		27,818 65	
New equipment—Chapter 121-1923		19 80	
Miscellaneous revenue			9 60
Excess accumulated income, forwarded from seventy-fourth fiscal year			14,042 20
Total income			$63,923 01

EXPENDITURES.

Current year expenditures, as follows		$49,874 96	
Materials and supplies	$743 31		
Salaries and wages	18,032 61		
Service and expense	30,972 00		
Property and equipment	127 04		
Prior year's expense		154 50	
Total expenditures			50,029 46
Excess accumulated income, seventy-fifth fiscal year			$13,893 55

NOTE.—This statement shows that for Current Year Expenditures $19,460.54 more was expended in the seventy-fifth fiscal year than in the seventy-fourth fiscal year. However, an item in Service and Expense of $27.818.65 for deportation in the seventy-fifth fiscal year was not included in seventy-fourth fiscal year expenditures, as this cost was paid for by the various institutions in the seventy-fourth fiscal year. Not considering this item, the expenditures for the seventy-fifth fiscal year would be $8,358.11 less than for the seventy-fourth fiscal year.

Status of Control Ledger Balances (As at June 30, 1924).

Seventy-fifth Fiscal Year.

FUNDING GROUP.

Available appropriated funds	$26,693 28	Appropriations—	
		Deportation of insane, 415–1919	$0 39
		Travel and contingent, 905–1921	8 66
		Printing, 905–1921	749 59
		Support, 121–1923	1,805 70
		Salaries, 121–1923	2,267 39
		Deportation, 121–1923	21,681 35
		New equipment, 121–1923	180 20
Total	$26,693 28	Total	$26,693 28

PROPRIETARY GROUP.

Warrants receivable	$1,322 68	Claims filed	$1,322 68
Property and equipment, per inventory July 1, 1923	5,759 83	Accountability for property and equipment	5,759 83
Cash revolving fund, general	300 00	Reserve for revolving funds	800 00
Cash revolving fund, deportation	500 00	Excess accumulated income, seventy-fifth fiscal year (per statement)	13,893 55
Support, etc., fund	13,893 55		
Total	$21,767 06	Total	$21,767 06

REPORT OF DEPORTATION AGENT.

September 1, 1924.

Hon. W. D. Wagner,
Director of Institutions,
Sacramento, California.

Dear Sir: As your deportation agent it devolves upon me to submit a report of the work accomplished during the past biennium. The activities of the department are constantly increasing and I am pleased to report a material increase in the number of aliens deported to their native countries and nonresidents returned to their homes in other states and countries, much to the relief of our state institutions.

ALIENS.

On my return from an eastern trip in April, 1922, I took occasion to go to Washington, D. C., and call on the Commissioner General of Immigration. The crowded condition of our institutions was stressed and request made of the Commissioner, that if possible to do so, deportations be speeded up. Mr. W. W. Husband, the Commissioner, received me courteously and promised his support. His response was felt almost immediately and the number of deportations for the past fiscal year shows an increase of 120 per cent, while the good work continues. The immigration authorities for the districts of northern and southern California are rendering their active cooperation and I am taking this opportunity, on behalf of this Department, to sincerely thank them and Mr. Husband for their efforts in our behalf. During the period 181 aliens were deported.

NONRESIDENTS.

By an amendment to our law approved by the Governor May 2, 1923, we are authorized to return to their homes in other states inmates of our reform schools. The proposition was somewhat in the nature of an experiment, some doubt existing as to whether the deportees would remain away from California, and as to the propriety of giving these juvenile delinquents their freedom. Thus far the experiment has proved a wonderful success, not alone as a relief to our fiscal burdens, but in giving the boys a chance to "make good" far from the scene of their delinquencies. Mr. O. H. Close, superintendent of the Preston School of Industry, realizing the importance of the move, has energetically and intelligently handled the situation and the success is largely his. Our plan is to locate the parents of the boys, initiate correspondence to ascertain their attitude and, if possible, financial assistance for the return of the boys to their homes. Of 158 boys thus returned during the biennium but two have returned to California and reports have been received from many indicating they are taking advantage of the opportunity afforded them, after the errors of the past. This, to us, is a source of pardonable pride, giving this large number of healthy red-blooded young men an opportunity to redeem themselves. During the biennium 448 nonresidents were sent to their homes in other states and countries. It might be apropos to present our views as to why California is called upon to afford asylum to so many nonresidents.

Our rapid growth in population is no doubt responsible for a major portion of it and our climatic conditions for the remainder. The "family doctor," without any intention or desire on our part, to discredit him, has little or no knowledge of psychiatry, as it is a specialty in itself. The doctor is called in to attend a case; he scrutinizes the patient and attempts a diagnosis; he is puzzled at its aspects and tries all the well known remedies at his command without results; finally, he falls back on his only resource and suggests a change of climate, recommending California. This is no idle theory—we are confronted with it every day by relatives and friends beseeching us to permit their unfortunates to remain in California, the greatest sanitarium in America. Of course we would like to share the munificent benefits of this great sanitarium with all the unfortunates who are attracted thereto, but the burden of such a charity is too great and for our own protection we must insist that each state assume the care of its own defectives. The following table shows the number of nonresidents deported from the several institutions during the biennium:

	Year ended June 30, 1923	*Year ended June 30, 1924*	*Total*
Stockton	36	45	81
Napa	35	27	72
Agnews	14	15	29
Mendocino	7	10	17
Southern California	67	51	118
Norwalk	20	31	51
Preston	12	136	148
Whittier	--	1	1
Sonoma	--	1	1
Totals	191	317	508

ECONOMIC ADVANTAGES OF DEPORTATIONS.

California, like all the other populous states of the Union, is confronted with the problem of housing and caring for an ever increasing number of defectives and delinquents. The population of our state hospitals for the insane increased 346 during the biennium notwithstanding the deportation of 522 inmates thereof by the federal and state governments. It is greatly to our advantage to foster federal deportations as it costs us nothing and our state and country are relieved of the burden of their care for all time. The deportation of nonresidents is quite an item of expense to us—the mental cases costing about $120 per capita and the delinquents about $100 per capita. However, when we take into consideration the net saving of $2,500 for every defective deported and $800 for each delinquent, the economy of the proposition is unassailable. Just imagine, if you are familiar with the present crowded condition of our hospitals and the Preston School, what the conditions would be without the relief by deportations. It is more logical to expend a few thousand dollars for deportations than to expend large sums for new structures for housing purposes. Your attention is called to the accompanying tables for detailed information.

In closing permit me to thank you and the present administration for your unqualified support in a conscientious endeavor to execute my duties fairly and faithfully.

Respectfully,

CHAS. F. WAYMIRE,
Deportation Agent.

TABLE No. 1.

Nativity of Aliens Deported During the Biennium.

Austria	5	Ireland	3
Australia	1	Italy	23
Azore Islands	1	Jugo Slavia	1
Canada	14	Mexico	59
China	6	Norway	4
Chili	1	Peru	1
Columbia	2	Portugal	5
Dalmatia	1	Russia	3
Denmark	4	Scotland	4
England	8	Spain	6
Finland	2	Sweden	4
France	2	Switzerland	7
Germany	5	Turkey	2
Greece	4		
Guiana, British	1		
Holland	2	Total	181

TABLE No. 2.

Time in the United States of Aliens Deported During the Biennium.

1 to 6 months	1	24 to 30 months	20
6 to 12 months	32	30 to 36 months	20
12 to 15 months	28	36 to 38 months	22
15 to 18 months	20	48 to 60 months	10
18 to 21 months	17		
21 to 24 months	11	Total	181

TABLE No. 3.

July 1, 1922, to June 30, 1924.

Deported on United States government warrants	179
Deported by relatives or friends	2
Cases held pending litigation	2
Cases under investigation	73
Cases with negative results	7
Total	263

TABLE No. 4.

Showing Deportation Since September, 1915.

Nonresidents returned to their homes	1,465
Aliens deported by federal authorities	790
Chinese returned to China	231
Japanese returned to Japan	71
Total	2,557

TABLE NO. 5.

Showing the Financial Benefit Derived by the State Through the Efforts of the Department of Institutions.

	Aliens deported and non-residents returned	Per capita cost of maintenance	Saving based on cost of maintenance	Per capita cost for construction, furnishing, etc.	Saving based on cost of construction, etc.	Total based on cost of maintenance, construction, etc.	Expense of deportation	Net saving to the state
1905	10	$156 37	$1,563 70	$550 00	$5,500 00	$7,063 70	$1,200 00	$5,863 70
1906	15	150 35	2,255 25	550 00	8,250 00	10,505 25	1,200 00	9,305 25
1907	8	162 32	1,298 56	550 00	4,400 00	5,698 56	1,200 00	4,498 56
1908	15	165 08	2,476 20	550 00	8,250 00	10,726 20	1,200 00	9,526 20
1909	27	163 03	4,401 81	750 00	20,250 00	24,651 81	1,200 00	23,451 81
1910	63	180 02	11,341 26	750 00	47,250 00	58,591 26	1,200 00	57,391 26
1911	63	176 50	11,119 50	750 00	47,250 00	58,369 50	1,200 00	57,169 50
1912	44	167 70	7,378 80	750 00	33,000 00	40,378 80	1,200 00	39,178 80
1913	39	177 24	4,912 36	750 00	29,250 00	34,162 36	1,200 00	32,962 36
1914	146	189 47	27,662 62	750 00	109,500 00	137,162 62	12,925 00	124,237 62
1915	27	189 59	5,118 93	750 00	20,250 00	25,368 93	1,200 00	24,168 93
1916	175	183 52	32,116 00	750 00	131,250 00	163,366 00	18,700 00	144,666 00
1917	123	198 87	24,461 01	750 00	92,250 00	116,711 01	13,500 00	103,211 01
1918	201	222 09	44,640 09	1,000 00	201,000 00	245,640 09	12,600 00	233,040 09
1919	144	257 40	37,065 60	1,000 00	144,000 00	181,065 60	12,600 00	168,465 60
1920	304	289 54	88,020 16	1,000 00	304,000 00	392,020 16	20,700 00	371,320 16
1921	198	303 20	60,033 60	750 00	148,500 00	208,533 60	20,700 00	187,833 60
1922	266	277 47	72,807 02	750 00	199,500 00	272,307 02	29,210 00	243,097 02
1923	248	280 00	69,440 00	750 00	186,000 00	295,440 00	24,680 00	263,220 00
1924	441	270 00	119,070 00	750 00	330,750 00	449,820 00	36,880 00	412,940 00
Totals	2,557		*$727,182 47		$2,069,810 00	$2,737,582 47	$214,495 00	$2,515,547 47

*This column merely shows the saving for one year. A conservative estimate of the average institutional life of an insane person is ten years; hence to arrive at the amount saved the total should be multiplied by ten.

REPORT OF SUPERINTENDENT OF THE CALIFORNIA SCHOOL FOR GIRLS.

VENTURA, CALIFORNIA.

To W. D. WAGNER,
Director Department of Institutions,
Sacramento, California.

DEAR SIR: The California School for Girls entered upon the biennium ending June 30, 1924, thoroughly organized upon a definite educational basis, having as its chief objective civic responsibility and moral integrity.

During this biennial period certain standards have been maintained which have made possible an intensive study of methods best adapted to the work of reinterpreting life and citizenship to these juvenile offenders, whose education has so early in life been interrupted and diverted from normal channels.

The term "education" is used in its broadest sense and covers every phase of training that tends to create new ideals of social and home life and restore self respect to the individual.

In a majority of cases the girls who have become wards of the state are victims of a disordered and irresponsible home life. With no standards of conduct in moral responsibility or self control, with irregular and consequently noninterested school life, these girls at an early age have drifted into delinquency.

In the case of the older girl whose interests in life have advanced to a point that indicates a need of reformation rather than guidance, this school can do little more than present her with a clean bill of health and give such training as will enable the girl to earn an honest living if she so desires. In the meantime her presence is a constant menace to the younger girl, whose habits of delinquency are not so firmly rooted. It may be said here that the segregation of older girls with thoroughly established habits of vice would increase materially the opportunities for normal development of the girl still in the formative period.

In an institution especially designed for older girls more attention could be given to vocational and commercial enterprises, while maintaining an environment that would be uplifting in character and suited to the needs of older girls. Such training is not possible where it can be given only in connection with the educational training of the younger girls of legal school age who must be given adequate opportunity for school work that will at least approximate that of the public schools.

This, together with the decidedly harmful influences of the older offenders, constitutes the greatest need for such an institution which could be maintained with far less expense, than a school which must be wholly educational to be effective.

The present organization of this school is believed to be such as will inculcate through its various departments of training such basic principles of self control, self respect, and social responsibility, as have been omitted or neglected in the early training of the child.

It is the purpose of this report to deal chiefly with the results of two years operation upon this educational basis.

PERMANENT IMPROVEMENTS AND REPAIRS.

With the exception of a garage for employees' automobiles, no new buildings have been added to the group during the biennium.

All buildings have had sufficient attention and repairs to assure their preservation, and increase their usefulness to the greatest degree. Nearly every building has been painted externally and internally during the biennium. Battleship linoleum has been laid in kitchens and pass pantries of all cottages and in diet kitchen and clinic at the hospital.

Temporary wooden steps up the banks at four cottages have been replaced with permanent ones built of cement. Additional cement walks have been provided.

Sewing and school rooms in the cottages, no longer needed for that purpose since the completion of the school house, were altered and are now useful as teachers' sleeping rooms.

All draining boards were placed in first class condition, and several new water heaters were bought to replace leaky ones.

The change of fuel from coal to gas has been a splendid help in our work. Three of the old coal ranges with ovens burned out are in use in the open shed where the canning is done.

In addition to the repairs in the houses, there have been other improvements which should be mentioned. Changes have been made in our electric lines so that they conform to the State Railroad Commission's specifications. A few additional yard lights were installed.

The septic tank has had a thorough overhauling and a sprinkling filter added.

Additional fire hose and chemical extinguishers have been purchased. Irrigation lines were added to make it possible to irrigate all of our orchards when water is available. It has been necessary to replace all of the old outside water lines, as they have deteriorated to such an extent that they are no longer serviceable. Due to the chemical content of the water in this section gradual deposits, especially in hot water lines, are laid until the lumen of the pipe is completely filled. Visible pipes in some of the basements have been replaced and it is probable that the whole system will eventually require attention.

After the city of Ventura acquired the water system there was tremendous increase in the water bill for the institution. In order to take advantage of the irrigation rate, which was much less than the domestic rate, it was necessary to install seven meters. This materially reduced the bill, and was a splendid investment.

The two miles of road on the school grounds is in bad condition, although the men have repaired it as well as possible with the materials at hand.

FARM.

Constant cultivation has kept our young orchards in thrifty condition. The citrus trees, walnuts, and old apricots have produced abundantly both years. The young deciduous fruit trees are just beginning to bear.

A small vineyard, planted on a sloping hillside near the entrance, has added to the landscape effect and in time will give an abundant supply of grapes.

The vegetable garden has produced well. The hay crop was a failure this year, due to the lack of rain fall at the necessary time.

We have added six new sows and a boar of the Duroc Jersey variety to our piggery. They are in good health and producing as much as can be expected, as three of the sows were young.

There has been an improvement in the quality of our herd of dairy cows during the biennium.

MEDICAL DEPARTMENT.

The medical department has furthered the work of the institution by constant attention to the physical care of the individuals of the student body.

This department is in charge of a resident woman physician who has a nursing staff composed of a graduate, registered nurse, and five pupil nurses from the student body.

A feature of this department which needs special commendation is the attention given prophylactic measures. To build up the resistance of the individual by establishing regular habits of life with a sufficient well balanced ration, plenty of fresh air and sunshine accompanied by proper amount of exercise, is a most important factor of prophylaxsis. Also, any girl reported sick, showing a rise in temperature or any untoward symptom, is immediately isolated in the hospital, and placed under close observation, being given specific treatment when indicated, or general symptomatic care. A sporadic case of diphtheria was discovered by this careful routine, and an epidemic probably averted.

All girls who do not show a recent scar, are vaccinated against smallpox. During the biennium, all employees were likewise vaccinated, due to the prevalence of smallpox in southern California.

About 65 per cent of the girls who are committed to this institution are afflicted with venereal disease. The most modern approved treatment is given this group. An increased number of douching compartments would be an advantage in this work. Also recommendation is made for replacement of those now in use by more sanitary and modern equipment.

The State Dentist spends every third month at the school attending to the dental work. Between visits, emergency work is cared for by a local dentist.

Aside from the care of the sick, the medical department affords nurses' training for a selected group of girls. Those who have been privileged to receive this training have been benefited in many ways. They have left the school with means at hand to earn a living, and those who have had the necessary high school work have entered hospitals on the outside, and taken the regulation course for nurses. One girl is preparing to take the combined nursing and college work, and thereby obtain a degree in each branch.

EDUCATION.

All work of the institution is conducted upon an educational basis for which due credit is given. Experience has taught us that the requirement of a certain period of training in every department of home life is a decided asset to every girl, whatever her individual

talents or limitations may be. There is also a distinct satisfaction and stabilizing effect in the completion of a definite part of an organized whole.

Academic Work.

Assuming that delinquency has naturally involved an interruption and disarrangement of school work, an effort is made to determine as soon as possible the educational status of each girl. Many girls are misfits in the public school system to such an extent that it is often best to disregard entirely all previous grading, and place the student in accordance with mental ability and actual achievement.

School Survey.

During April, May, and June, 1924, through a friendly cooperation of former members of the Bureau of Juvenile Research, a survey was made with a view to a better organization of academic work. Included in the 134 girls studied were 82 who were already attending classes during this time, 35 entering girls who must be placed in September, and 17 girls who, for various reasons, were not at this time in school but who seemed possible candidates for further scholastic work. Ages for this group range from 10 years 10 months to 20 years. Mental ages on the Stanford-Binet, from 9-5 to 17-4. Educational ages on Stanford achievement test from 8-11 to 17-11. Median chronological age is 16-11, educational 13-10, mental 12-10. Seventy-one per cent show a higher educational age than one would expect from mental age.

The survey shows that especially good work has been done in the eighth grade and in the opportunity room where steady, all day application and patient teaching under the most favorable circumstances obtainable have accomplished most gratifying results.

Based upon these findings academic work is arranged as follows:

Five hours work daily for all girls under sixteen years of age who have not completed eighth grade.

Part-time classes for girls over sixteen.

Under the first division, or girls under sixteen years of age, are two separate divisions, viz:

1. Girls whose school record and achievement test indicate ability to do seventh and eighth grade work. These girls are placed in one group under a capable teacher who conforms to the state course of study, and gives individual and group instruction required to complete the work outlined for eighth grade as prescribed in the Ventura County course of study.

2. Girls under sixteen, who are not able to accomplish seventh and eighth grades, are grouped in what may be termed the opportunity class. The object of this class is two-fold. First, to sift out and prepare for eighth grade work all pupils who are able to do such work. Second, to provide training which will tend to discover vocational possibilities of pupils whose mental limitation makes further academic work inadvisable. In this class are taught fundamentals to meet individual needs up to and including sixth grade. In addition to this class work, instruction is to be given in basketry, elementary sewing, toy making, art, and a minimum of gardening with nature study as an objective.

By the splendid cooperation of the county superintendent and the county board of education, our eighth grade graduates receive the Ventura County diploma. Such graduates are eligible to high school without further credentials. Many of the girls from the three classes which have received such diplomas have availed themselves of this opportunity, and are making excellent records in various high schools. It is noteworthy to add that these girls, in most instances, are earning their board and room doing housework or acting as mother's helper.

Graduation, with all its attendant honor, has given impetus to school work, and has been a great incentive to further study. These exercises are the outstanding event of the entire school year. The girl graduates attired in white organdy dresses present the usual program of class history, prophecy, will, and valedictory. A specially trained chorus renders apropriate musical numbers, while the entire school in best attire assembles in the beautifully decorated auditorium to do honor to the achievement of the eighth grade.

Parents and guardians of the girls are urged to make a special effort to be present at the joyous event. Many visitors and friends of the school as a whole are made welcome. The class of June, 1924, was honored by the presence of Governor Friend Wm. Richardson, Mrs. Richardson, and their young son John. Governor Richardson made a brief address to the intense satisfaction of the class. An address was given by J. Harold Williams, Ph. D., noted educator and psychologist.

The concentration and effort required to maintain the high standards necessary for graduation constitutes a great stabilizing factor in the institution.

Girls who have completed eighth grade are eligible to commercial classes if they so desire. This course includes shorthand, typing, comptometry, bookkeeping, and classes in English and mathematics necessary to insure stenographers and bookkeepers of efficiency. To this will be added in the coming year Spanish dictation.

For girls over sixteen part time classes are maintained, which stress primarily penmanship, spelling, arithmetic, and good usage in English.

The pursuance of this program has developed the need of one or more years of high school work. A majority of girls doing eighth grade work are very young. The concentration and enthusiasm that have marked the completion of this work invariably inspires the girl with the ambition for a high school education, and in many cases this is desirable. In order to accomplish this, the school is confronted with the problem of the home life of the girl during her attendance upon high school.

To return a girl to her own home, or previous environment, usually means failure. To place her in a home where she must work for her board and room is, in the case of the older girl, an aid in developing determination and responsibility, but with the younger girl involves a responsibility which often proves too heavy for her young shoulders, and her enthusiasm for high school soon wanes.

One year of high school work in the California School for Girls would give the decided advantage of one more year of training in stability with no loss of time from formal school work, and would shorten the period of service that must be given in order to complete the high school course.

Religious Training.

The religious instruction is dominated by the same spirit of opportunity, rather than requirement, that is characteristic of all training at the California School for Girls.

A brief daily chapel exercise in each cottage maintains a spirit of reverence and respect, with no infringement upon any religious belief that may be represented in the cottage.

At 9 a. m. each Sunday mass for the Catholic girls is celebrated by a priest from Ventura Mission. At 2.30 the sisters from the Mission school conduct Sunday school, which consists of instruction in Catholic doctrine and catechism. Confessions are heard at the school on the Fourth Saturday of every month preceding communion on the Fourth Sunday. Every Catholic girl is required to attend the services of her church.

Protestant Sunday school at 10:30 is a voluntary service for any girl who desires to attend. The purpose of this session is to give instruction in Bible content, memory work, and the study of the hymns and other sacred music.

The enrollment of this service, which includes practically every Protestant girl in the school, is evidence of the interest and appreciation for this opportunity for religious instruction.

On Sunday afternoon a chapel service is conducted in the auditorium, which every Protestant girl is required to attend.

Much appreciation is due the ministers of Ventura County for this voluntary contribution, and for their unfailing cooperation in any service that may pertain to the interest and welfare of the school

Domestic Science and Home Training.

Training in every branch of home making is taught in each cottage under as nearly ideal home surroundings as may be obtained in an institution. As stated previously, the primary organization of this institution is that of a school destined to emphasize training for the highest type of citizenship in its various phases. In order that the greatest possible time may be given such training every means has been used for reducing all labor which does not lend itself to such training. Kitchen floors have been covered with battleship linoleum, coal ranges replaced by modern gas ranges, electric washing machines and mangles installed in laundries so that the work is accomplished with a minimum of labor, and the training given in every case is that required in a modern home of moderate means.

Cookery includes the planning and serving of meals for the family group in the individual cottages. This work, of course, is intensely practical and covers every phase of preparation and care of food and provides experience in canning and preserving fruit. This work is directed by a matron in each cottage. In addition to this practical work there is great need for a dietitian who would have general supervision of all kitchens, and insure uniformly efficient training in each cottage, together with assistance in planning well-balanced menus according to scientific and practical principles. In addition to this general supervision, such a dietitian would be able to conduct weekly classes in the theory of domestic science to supplement the practical

cookery, adding scientific foundation and dignity of purpose to practical experience.

Other phases of home making, such as care of living rooms, care of bedrooms, and home laundry work, are ably directed by the house mother in the upkeep of the cottage home. Not only is careful attention given to every detail of such work, but a certain spirit of cooperation, loyalty and pride is maintained in being able to so direct the work of the home that it will in no manner interfere with the opportunities for school work and vocational training.

Household Arts.

This department includes weaving, basketry, elementary sewing, dressmaking and a minimum of millinery.

The department of weaving has developed materially during the biennium. There has been a decided improvement in both the quality and quantity of work produced. Many orders for outside work have been filled, and a reputation for excellent work has been established. While the weaving of rugs has predominated, satisfactory progress has been made also in textile weaving, and plans are being made for increasing this fascinating occupation.

In view of the fact that this work, together with basketry and lace making, are used largely as occupational therapy and as supplementary to part-time classes, the output of work has been very satisfactory.

Classes in elementary sewing cover the making of underwear, aprons, middy suits, and all household linens. Mending, darning, simple crocheted edges, and models in stitches, seams, plackets, hems, etc., are required. The accomplishment of this course involves the making of all clothing worn in the institution as well as household linens. A minimum of twelve weeks, of fifteen hours per week, in the course is required of every girl, and over and over it has been demonstrated that such a requirement is wise, regardless of the fact that apparently many girls have no natural ability or desire for such work. Careful teaching and constant repetition invariably give to each girl in the end a knowledge of fundamental principles that inculcate interest, appreciation, and to a certain extent ability in the choice of material, and the making and care of clothing.

Upon the completion of the required course a girl may, if she so desires, enter the class in dressmaking.

This class involves the making of all dresses provided paroled girls upon leaving the school, serge street dresses for parole, plaited skirts worn in the honor cottage, and a certain amount of dressmaking involving the use of various materials in cotton, silk, and wool, the simple forms of tailoring, a practical study of textiles with reference to utility and price, the use of commercial patterns, and such problems in applied design and costume design as may be used to supplement class work.

Self expression and decision are encouraged to the greatest extent. Whenever it is possible to do so each girl makes her own outfit of parole clothes. In every case, when time will permit, the girl who is leaving the school may choose material and designs for her own dresses.

Creditable exhibits of work in both domestic science and household arts have been made in county fairs and the State Conference of Social Agencies.

Physical Education and Recreation.

Classes in physical education assemble daily during the school week. Every girl, unless excused by the resident physician, is enrolled in these classes. This course includes military and fancy marching, folk dancing, free arm exercises, Swedish gymnastics, Indian clubs, dumbbells, and wands.

Apparatus work, such as stall bars, flying rings, ropes, poles and swings give variety to work in the gymnasium. Volley ball and other indoor games are also included.

In connection with this course, under the direction of the director of physical education, the girls are taught tennis, basketball, and baseball. Three tennis courts, a baseball field, and croquet sets provide an abundance of wholesome outdoor recreation, in addition to regular class work. A spirit of friendly rivalry is occasioned by frequent matched games between cottages, while no other factor in the school contributes more to the spirit of sportsmanship, fair play, and cooperation.

The indoor recreation is wholly a matter of individual choice. After the supper hour, which is at 5.30 p. m., aside from a forty-five minute study period, which is required for school preparation, a girl may read or busy her fingers with her own fancy work, entirely alone, or she may join a group in singing, games, or friendly conversation.

An abundance of wholesome reading matter is provided by the Ventura County Library. This is supplemented by subscriptions by the school of standard magazines for each cottage. A piano and Victrola in each cottage provide music for all. These recreation periods are characterized by relaxation and a spirit of freedom that represents as nearly as possible a normal family group.

The weekly "movie," of course, is the chief event in the recreational program.

The yearly camping trips, visits to the county fair, picnics to the beach, which are the special privileges of the honor cottage, have become established features of the honor group.

Practical Agriculture.

This important work supplements the part-time classes in school and a minimum of 12 weeks is required of every girl at some time during her stay at the institution, unless excused by the resident physician. Especial attention is given to the raising of vegetables in a practical way.

The school enjoys an abundance of fresh vegetables as the result of this training, while the wholesome outdoor work is a valuable asset in health and development of rugged endurance.

The raising of flowers, the care of lawn and grounds in the immediate vicinity of the administration building, is done by the girls from the hospital building, for whom the resident physician recommends out-of-door work in a lighter form.

DISCIPLINE.

It may be said at the outset that the problem of discipline has been reduced to a minimum. A well-balanced program of study, work, and play, a happy normal home life, sympathetic encouragement in self expression in both work and play, furnish a normal outlet for energy

of youth which has previously been wasted or repressed as the case may be.

Everywhere a happy atmosphere of contentment and industry prevails, which is noticed by even the casual visitor at the school. A full understanding of definite requirements, a sense of cooperative obligation in the routine work of the school, together with the established precedent of fair play and just consideration, eliminates unrest and dissatisfaction. Understanding and sympathetic teachers and house mothers establish confidence and supply, to a great extent, the natural craving for motherly counsel that has been withheld entirely or injudiciously administered in the former environment.

Under such a regime discipline as administered in this institution more nearly approaches that of a well-ordered home and does not approximate the corrective measures necessary in an ordinary school room of our public schools.

Social responsibility is developed by the community life, but in every case the individuality of the girl is respected and the utmost of self expression encouraged. In other words, as a member of a social unit the girl must accept the responsibility of group life, and as an individual is encouraged to express and develop such special talents as will tend to make her a useful and happy citizen.

PSYCHOLOGICAL RESEARCH.

For the first year of this biennium psychological work was carried on as during the previous two years by the California Bureau of Juvenile Research. A visiting psychologist made a careful examination of each entering girl, followed by a searching interview checked up and supplemented by medical record, probation and school reports, and the observations of those who had been recently caring for her. This information, embodied in a brief report, was submitted to the superintendent with recommendation for the girl's immediate placement in the school, and the general plan to be followed that seemed likely to most nearly meet her special needs.

A report of the three and a half years' work of the Bureau in this school was published in the May-July, 1923, issue of the Journal of Delinquency under the title "A Survey of 341 Delinquent Girls in California," by Julia Mathews. A brief summary of some of the outstanding facts revealed by this study may be of interest here.

Race and Age at Commitment.

Age at commitment	*White*	*Colored*	*Mex.-Ind.*	*Total*
Twelve	2	--	--	3
Thirteen	13	1	--	14
Fourteen	30	1	2	33
Fifteen	62	5	3	70
Sixteen	83	3	5	91
Seventeen	54	5	--	59
Eighteen	42	3	1	46
Nineteen	18	1	--	19
Twenty	6	--	--	6
Totals	311	19	11	341
Median	16.6	16.7	16.2	16.6

The youngest entrant was aged 12 years 7 months, the oldest 20 years 10 months, with the median at 16.6.

Nativity.

Of these 341 girls, 95 per cent were born in the United States, 45 per cent in California. The 5 per cent of foreign born represent ten different countries. Sixty-four per cent of the whole group have parents who were both born in the United States, 15 per cent have foreign parents, 9 per cent one parent native and one foreign, while for 12 per cent the parentage is unknown.

Physicial Condition.

In height and weight the girls of this group are slightly superior to girls of the same ages in two representative California public school systems (Bakersfield and Santa Ana) and markedly superior to Smedley's age norms. The average age for maturity seems to be slightly earlier than for similar groups in other parts of the country.

Offenses.

Among girl delinquents sex offenses predominate. Many offenses listed for boys do not occur at all among the girls. Only one case of assault is found in our group. Truancy, vagrancy, and drunkenness accompany other misdemeanors, but have in no case been considered the main cause for commitment. Sex offenses appear in 63 per cent of commitments, while offenses against property rights include only 6 per cent. "Incorrigibility," which may or may not include sex offense, accounts for about one-fourth of the cases. The remaining 6 per cent enter as dependents.

Intelligence.

(a) Social grouping and intelligence:

	I. Q. range	*No.*	*Per cent*
Feeble-minded	.51– .79	99	29
Borderline	.67– .81	96	28
Dull normal	.81– .92	76	22
Average	.89–1.08	64	19
Superior	1.10–1.18	6	2
	.51–1.18	341	100

(b) Intelligence and age at commitment. It is interesting to note that the median I. Q. is practically the same at each age level. There seems to be little relationship between age at commitment and I. Q.

(c) Intelligence and race. In this school, as in the boys' schools of the state, the white race leads by several points in median I. Q. For white girls the median I. Q. is .81, for colored girls .72, and for Mexican-Indians .68.

(d) Intelligence and offenses. Immorality and incorrigibility cover practically the whole range in I. Q. with the median for incorrigibles at .82 as compared with .79 for immorality. Throwing into one group the offense against property, we find a median of .82, the same as for incorrigibles, but three points higher than for sex offenders. Dependents are evenly distributed as regards intelligence.

(e) Intelligence and schooling. Only 9 per cent of the girls are at or above age in school at time of entrance. Four girls, or 1.2 per cent, are one year advanced. One girl is two years accelerated. Fifty-three per cent, or more than half, are three years or more retarded. If mental age is considered, however, the situation is reversed, 84 per cent being in a grade two or more years beyond these percental ages. 2.4 per cent over-accelerated as much as five years.

(f) Intelligence and occupations. Girls who have worked only at domestic service show a lower I. Q. than do those who have worked in stores and offices. Median I. Q.'s range from .71 for cannery workers to .92 for "professions"; the stage, movies, musicians, etc.

Temperament.

These 341 girls were rated on a five-point scale descriptive of temperament or prevailing mood ranging from phlegmatic to excitable. Four per cent fall in the phlegmatic group, 9 per cent called calm, 18 per cent moderate, 52 per cent active, and 17 per cent excitable. The excitable group show a much higher median I. Q. (.84) than do the phlegmatic (.68). Findings here would seem to point to the possibility that super-exuberant energy, combined with a somewhat backward mental development and often poor home conditions, furnish a good basis for delinquency.

Other Mental Conditions.

Seventeen girls were found to be unmistakably psychopathic. Four of them have been at one time or another in state hospitals. Only two, however, have been legally committed as insane. One or two others, being also feeble-minded, have found care at Sonoma State Home. Besides the seventeen who were considered definitely psychopathic, there were a large number of lesser deviates whom for want of a better term we might call emotionally unstable. Perhaps one-third of our total group might classify as such.

Home Conditions.

Sixteen per cent of these girls have lived for from one to ten years in institutions. More than half of them come from homes that have been broken by death or divorce. Twelve girls have two sets of parents. For fourteen girls nothing is known of their parents. In many cases the girls' parents are a liability, rather than an asset. Four fathers are serving penitentiary sentences for statutory offenses against their daughters. Several others should be. In contrast to these homes, however, are many good ones and a few that are apparently excellent.

After-Success.

Of the 183 girls of this group who have been for a longer or shorter time on parole, 108 were reported as doing well. Of these, 54 per cent are feeble-minded or borderline, the rest dull or average normal. Of the 39 doing only fairly well or poorly, 60 per cent are feeble-minded or borderline. Of the 87 who seem to have failed, 62 per cent or borderline or lower.

Summary.

Physically the girls of this group are, if anything, superior to average girls of the same age. Intellectually they rank considerably lower than California school children in general, the median I. Q. for the group being .81 as compared with that of approximately 100 for the Lerman's 905 unselected public school children. Temperamentally they are more unstable, harder to interest, more easily swayed by the impulse of the moment, and less regardful of consequences.

Conclusions.

The motives and desires that result in delinquency do not seem essentially different from those of the nondelinquent. Most of the children who come to the courts have long been recognized as difficult and much of their trouble could probably have been prevented had their special needs been sooner understood and more adequately met. As immediate steps toward prevention, the following suggestions are offered:

(1) Continuance of the present effort to find and perfect instruments that will measure and predict emotional equipment and possibilities as well as we now measure intelligence.

(2) Further study and attention to the needs of the dull, but not feeble-minded, child in school.

(3) Further studies along the line of possibilities in industry for the feeble-minded person who does not necessarily need the care of an institution.

(4) Provisions for an earlier study and understanding of children who deviate in any way, especially for the emotionally unstable child.

(5) Special segregation of the nonamalgamable psychopaths.

(6) Provision for permanent parole or supervision, perhaps from a parent institution, for many able-bodied, feeble-minded, and psychopathic individuals who could be wholly self-supporting if they had guidance and protection.

The above summary, developed from a very intensive study of 341 girls whose conduct has been of such nature as to cause their commitment to the California School for Girls by a court of the state, should be of especial interest to all students of juvenile delinquency.

The superintendent is very grateful to have the report, as it answers adequately many questions which are continually being asked the school by students, teachers, societies, and individuals interested in this great problem.

MOVEMENT OF POPULATION FOR YEAR ENDING JUNE 30, 1923.

Statement of Actual Population in Institution.

In institution at midnight June 30, 1922		160
Received during year July 1, 1922, to June 30, 1923:		
By new commitments	75	
*By return from parole	18	
By return from furlough	5	
By return from escape	7	
Total received		105
In institution during year		265
Passed out during year:		
By discharge	12	
By expiration of commitment	9	
By parole	71	
By furlough	13	
By escape	11	
By transfer	1	
By return to court	2	
Total passed out		119
Total population at end of year		146

Statement of Paroles.

On parole at midnight June 30, 1922	85	
Paroled during the year	71	
Transferred from furlough to parole	5	
Total on parole during year		161
Discharged from parole	14	
Term expired on parole	23	
Returned from parole	18	
Died on parole	1	
Total	56	
On parole at end of year		105

Statement of Furloughs.

On furlough at midnight June 30, 1922	5	
Furloughed during the year	13	
Total on furlough during year		18
Discharged from furlough	3	
Returned from furlough	5	
Transferred from furlough to parole	5	
Total removed from furlough during year		13
On furlough at end of year		5

* This number includes all girls who were returned to the school for any reason, and includes girls who were sick and those needing replacement or further training in the school.

MOVEMENT OF POPULATION FOR YEAR ENDING JUNE 30, 1924.

Statement of Actual Population in Institution.

In institution at midnight June 30, 1923		146
Received during year July 1, 1923, to June 30, 1924:		
By new commitments	85	
*By return from parole	17	
By return from furlough	7	
By return from escape	7	
Total received		116
In institution during year		262
Passed out during year:		
By discharge	5	
By expiration of commitment	4	
By parole	63	
By return to court	5	
By furlough	13	
By escape	7	
By transfer	2	
Total passed out		99
Total population at end of year		163

Statement of Paroles.

On parole at midnight June 30, 1923	105	
Paroles during year	63	
Transferred from furlough to parole	6	
Total on parole during year		174
Discharged from parole	24	
Term expired on parole	17	
Returned from parole	17	
Returned to court from parole	3	
Total		61
On parole at end of year		113

Statement of Furloughs.

On furlough at midnight June 30, 1923	5	
Furloughed during the year	13	
Total on furlough during year		18
Returned from furlough	7	
Term expired on furlough	2	
Transferred from furlough to parole	6	
Total removed from furlough during year		15
On furlough at end of year		3

*This number includes all girls who were returned to the school for any reason, and includes girls who were sick and those needing replacement or further training in the school.

Girls Admitted During Biennium.

COUNTIES.

Alameda	12	Sacramento	2
Fresno	12	San Bernardino	3
Humboldt	5	San Diego	2
Imperial	3	San Francisco	19
Inyo	1	San Joaquin	3
Kern	8	San Mateo	3
Lake	1	Santa Barbara	2
Los Angeles	29	Santa Clara	8
Madera	2	Shasta	1
Mendocino	1	Siskiyou	1
Merced	4	Sonoma	3
Monterey	2	Sutter	1
Napa	1	Tulare	5
Orange	14	Ventura	1
Placer	1		
Riverside	10	Total	160

PAROLE.

The parole work represents a field for actual demonstration of the success of the training in the school. This success is not only exemplified by the stability and industry of the girl on parole, but also by her appreciation of the justice and fair play of the school in directing her conduct.

This increased confidence in the school and the principles for which it stands, and improvement in the general conduct of the girls are the greatest achievements in this department during the biennium.

Many factors enter into the building up of the improved attitude of the girls toward the school.

The just consideration which the girls have received in the school is carried into the parole supervision. In any case of individual misconduct on the part of a parole girl a careful analysis of underlying motive is made before any judgment is rendered. In every case such adjustment takes into consideration the ultimate development of moral stability, and the girl is not returned to the school unless her misconduct is such that further liberty would hinder rather than help her progress.

Several girls have returned to the school voluntarily; others who have been absent from their employment without permission for a time, have gone to the parole supervisor's office and presented their cases for adjustment. Sometimes they are accompanied by a prospective bridegroom or a young husband. In each case adjustment is made for the best interest of the girl and her future, after due consideration of all facts. Needless to say, the parole supervisor must be a most resourceful person to meet and handle emergencies tactfully and sensibly.

In the near future it is our hope to have a full-time officer in the north, instead of half-time as at present. There seems to be an earlier adjustment of the entering girls to the school routine than formerly, which fact will have a tendency to shorten the average length of stay in the school.

During the biennium

49 per cent remained between 1 and 2 years;
42 per cent remained between 2 and 3 years;
9 per cent remained over 3 years.

These figures can be reduced during the present biennium if ade-

quate help is given to place the girl outside and maintain the supervision necessary.

CONCLUSION.

This biennium has been characterized by a gratifying smoothness in the operating machinery of the institution.

The spirit of equity that has prevailed throughout the student body applies to the staff as well and all relationships have been uniformly harmonious.

Girls of legal school age have been placed in school in accordance with the law as applied to public schools. Additional provision has been made for girls not included in such law.

Attention to health and development of character have in every case had precedence over all other interests and have constituted the chief objective in all educational training.

The necessity of serious disciplinary measures has been absent entirely. In many cases girls on escape from parole have voluntarily returned to the parole officer and with perfect confidence presented the case for adjustment. On three occasions girls on escape from the school have voluntarily returned within 24 hours of departure.

There has been a marked increase in appreciation for the liberal provision made by the state for wholesome food, comfortable homes, and an excellent quality of material for clothing.

Slowly, but effectively, the feeling of hostility and rebellion at being deprived of what they are pleased to term "freedom" is being replaced by a sense of gratitude and appreciation for the protection and opportunities offered by the state. This must of necessity result in a higher type of citizenship.

Intensive training when accompanied by a spirit of good faith and cooperation enables a girl to prepare herself in a minimum of time for a reinstatement in society under the supervision of the parole department. So effectual has been the response to this opportunity that the average time spent in the school has been materially lessened, while the number on parole has increased to a point where the present provision is no longer adequate to meet the demand.

A full-time officer in the north, as well as the south, is necessary to enlarge the field of placements, and provide adequate supervision.

In view of these results the administration feels justified in the continuation and enlargement of the education policy, which ostensibly offers the best approach to the solution of problems of juvenile delinquency.

This school looks forward to offering adequate protection and educational facilities, together with pre-vocational training, to the great number of youthful offenders who must be safely guided through the period of adolescence if stability of character is to be attained.

To this end all efforts must bend toward raising the status of the school from that of custodial care to one of protective opportunity.

Respectfully submitted.

OLIVE P. WALTON, M.D.,
Superintendent.

REPORT OF SUPERINTENDENT, INDUSTRIAL HOME FOR THE ADULT BLIND.

OAKLAND, CALIFORNIA.

MR. W. D. WAGNER,
Director of Institutions,
Sacramento, California.

DEAR SIR: I have the honor to submit herewith the report of the Industrial Home for the Adult Blind for the biennial period ending June 30, 1924.

On the average attendance of 126 inmates the per capita cost was $406.85 a year, $179.84 of this chargeable for salaries and $227.01 for support and maintenance.

The output of the industrial departments was as follows:

Brooms	187,807
Toy brooms and whisks	50,030
Baskets	4,008
Chairs recaned	3,783
Woven rugs, (yards)	206½
Mattresses repaired	221

The total sales amounted to $122,723.42, an increase of $10,016.72 over the previous biennial period.

The assets of the shop fund, which on June 30, 1922, were $33,099.88, would at the end of the period under review be $47,631.85 had not the money in this fund and that received from the sale of products been, by legislative action, transferred to the general fund.

To offset the loss of this fund $50,000 a year was allowed in the budget for "factories." Formerly no appropriation was made, or needed, for the Industrial Department as it was not only self-supporting but slowly increasing its assets.

I believe it would be conducive to successful operation of the industries to have a bill passed to return to the shop fund—known as the "Adult Blind Fund"—the money contributed therefrom to "Salaries" and "Support" less the sums expended from the appropriation for "Support Factory." If this were done no appropriation for the shops would be necessary and we would not, as at present, be restricted to doing a business within the limits of the appropriation.

I believe that no other institution or state activity is running a commercial enterprise. Receipts of other departments or institutions are, for the most part, in the nature of fees or returns to the state of money expended by the state for the maintenance of patients. The latter are designated contingent receipts, but money received in the course of business should not be placed in the same category or classification.

However, should appropriation be made for the industrial department, I would urge a considerable increase in the amount to enable us to expand our activities. As you are aware, we were desirous of adding other industries during the past year but were unable to do so as the appropriation made for the shops was not sufficient to carry on the work on hand.

Provision should also be made for putting teachers in the field to instruct the blind in their own homes in occupational and industrial work. Several years ago the organic act establishing the Home was amended to empower the board of directors to undertake this work but lack of funds prevented action. Establishment of this department will do much to bring the Home in close touch with the blind of the state and enable us to render encouragement and aid where it is sorely needed. It has been the experience in states where "home teachers" are employed that many blind, who without instruction would become dependent on state or other support, are enabled by instruction to contribute to their own support. On acount of this productiveness and the contentment produced by occupation, they are less likely to be forced by their families into public institutions.

The erection of the shop building, employees' cottage and the recreation building in which is installed a central heating plant, have brought the institution to such a state of material completion that our request to the legislature for special appropriations will be confined to the small amount necessary for laying out roads and sidewalks around the new units just mentioned. Estimates as to the cost of these improvements are being prepared by the Department of Public Works.

We are indebted to the Optimist Club of Oakland for the gift of a fine radio outfit which is a continual source of pleasure to our people. Expressions of appreciation are also due to the very many friends of the blind who have given entertainments and conducted reading classes during the past years.

I also wish to thank the members of the Department of Institutions and executive offices for their untailing courtesy, consideration and assistance in the management of the institution.

Respectfully submitted.

DOUGLAS KEITH,
Superintendent.

FINANCIAL STATEMENT.

Year ending June 30, 1923.

Expenditures— *State Appropriations.*		
Salaries and wages		$21,932 05
Materials and supplies		18,516 06
Service and expense		9,835 70
Property and equipment		2,125 92
Total		$52,409 73
Additions and betterments—structures		15,308 51
Grand total		$67,718 24
Expenditures— *Adult Blind Fund.*		
Salaries and wages		$20,814 02
Materials and supplies		32,836 81
Service and expense		2,092 78
Total		$55,743 61
Receipts		$62,364 95
Sales.		
Broom shop		$59,991 78
Chair shop		3,071 00
Basket shop		1,948 33
Total		$65,011 11
Contingent receipts		$1,622 59
Assets.		
Material in stock		$6,744 15
Material issued on hand		2,608 95
Manufactured stock on hand		1,810 83
Accounts receivable		6,688 87
Cash in state treasury	$24,948 14	
Less reserve for liability for unclaimed check	24 50	24,923 64
Total		$42,776 44
Bills payable		$240 37

FINANCIAL STATEMENT.

Year ending June 30, 1924.

Expenditures.

Institutional—		
Salaries and wages		$23,388 45
Materials and supplies		18,918 13
Service and expense		6,456 62
Property and equipment		3,017 43
Total		$51,780 63
Additions and betterments—structures		$78,177 32
Factory—		
Salaries and wages		$19,019 98
Materials and supplies		29,619 53
Service and expense		2,719 94
Total		$51,359 45

Adult Blind Fund.

Expenditures—		
Paid on account factory, seventy-fourth fiscal year		$323 26
Contributed to salaries		19,736 35
Contributed to support		22,488 35
Contributed to support factory		5,308 54
Withdrawn for revolving fund		500 00
Total		$48,356 50
Receipts—		
Factory		$59,733 48
Contingent		1,382 65

Sales.

Broom shop		$52,527 28
Chair shop		2,723 78
Basket shop		2,461 25
Total		$57,712 31

Factory Assets.

Material in stock		$7,676 34
Material issued and on hand		1,782 74
Manufactured stock on hand		1,786 73
Accounts receivable		4,254 12
Revolving fund		500 00
Cash in state treasury (had factory expenditures only been paid by Adult Blind Fund)	$33,203 38	
Less reserve for liability for unclaimed check	24 50	33,178 88
Total		$49,178 81
Bills payable		$1,546 96

REPORT OF SUPERINTENDENT, PRESTON SCHOOL OF INDUSTRY.

WATERMAN, CALIFORNIA.

MR. W. D. WAGNER,
Director State Department of Institutions,
Sacramento, California.

SIR: The following is a brief report for the Preston School of Industry covering the sixteenth biennium, ending June 30, 1924. The report reviews the population movement, the class and trade activities, the parole program, farming, the building and construction program and calls attention to the needs of the institution. Statistical tables set forth facts concerning the population movements, causes for commitments, and other interesting and important data regarding the inmates of the school.

POPULATION MOVEMENT.

At the close of the biennial period ending June 30, 1924, the Preston School of Industry had a population of 550 boys at the institution, with 398 on parole. During the seventy-sixth fiscal year, ending June 30th, Preston received 671 boys. This rapid turnover required by the school, if it were to continue to take new boys regularly from the courts, was accomplished by returning 160 boys home to their parents or guardians in other states and foreign countries. The courts, in order to help relieve the congestion at the school, released more boys than usual before the expiration of the time necessary for them to earn parole.

There will not likely be any decrease in the number of commitments. On the contrary, with the growth of the state's population, the number is likely to increase. Greater freedom of movement by automobile and rail has brought an ever-increasing number of boys between sixteen and twenty-five to the state from all parts of the United States. These boys, frequently, get into trouble, and constitute between 25 and 30 per cent of the commitments to the school.

The Army and Navy post in California, also, contributes to the number of delinquents received by the school annually. (See table No. 13.)

The large population has been cared for with difficulty. The school does not have sufficient quarters, which necessitates releases when it would be better to keep boys. The shoemaking and clothing departments have been unable to properly meet the demands for clothing; the hospital facilities have frequently been crowded. There has, also, been a shortage of dairy and poultry products from our farm department. A rapid expansion of the various departments is necessary to care for the constantly increasing population.

EDUCATIONAL ACTIVITIES.

The purpose of classroom instruction at Preston is twofold. In the first place most of the boys must be trained to follow some vocation in order to be self-supporting when they are released from the school. For these boys, the teachers endeavor to correlate the classroom sub-

jects with the trade work. To make this instruction effective each teacher must adopt the individual method of instruction and "tie up" the reading, the writing and the arithmetic with the practical needs of the boy. This method is ineffective with more than twenty in a class. An individual card index system is used where the name, age, residence, previous schooling and trade is tabulated. An individual program is then worked out for each boy.

In the second place there are occasional high school students who will continue their education after leaving Preston. It is the policy of the school department to employ certificated high school teachers. The subjects taught are mathematics, English, history and civics. State textbooks are used and credit given, which can be applied toward a high school diploma. Spelling, reading, writing, English and arithmetic are taught in the grammar grades.

Upon entering school all the boys are assigned to the receiving schoolroom where they are segregated according to their mental qualifications and previous schoolroom attainments and then, after a careful review placed in their proper classrooms. Altogether there are fourteen classes which include grammar and high school grades, a mechanical drawing class, a commercial class and an Americanization class. Mechanical drawing is given to boys who are interested in the mechanical trades. The commercial work consists of shorthand, typing, business English and bookkeeping and is given only to students of high school standing. The Americanization class is made up principally of foreign boys who are learning to read and write the English language.

The educational department has nine employees including the educational director. The athletic director teaches a class in mechanical drawing for two hours each morning. In addition there are six full-time teachers of academic subjects.

The schoolrooms accommodate two hundred and fifty students. The average number of boys attending all classes during the past year was two hundred and thirty-seven. Of these 24.8 per cent were students of high school grade, 75.2 per cent were of grammar school grade. The average cadet had completed the sixth grade in the public schools and had spent some time in the seventh.

About 25 per cent of those entering school were practically at a standstill in school work. As soon as it was discovered that they were marking time in their studies, they were given an all-day program where they could receive trades training in accordance with their mental and physical capabilities.

An examination of five hundred and twenty-nine cases that were given the Stanford Revision of the Binet-Simon General Intelligence Examination reveals a range of intelligence quotients from thirty-three to one hundred and twenty-two, with a median of 80.4 per cent. According to psychological standards one-fourth of our population is feeble-minded, one-half is borderline or dull normal and the remaining fourth is of normal intelligence.

Because of the varied schoolroom experience and the wide range of abilities represented by the boys, it is necessary to arrange the subjects taught into larger divisions than found in the grammar schools. The term "school" is used instead of "grade."

Following is a general statement of the work covered in each division:

School "one." All new boys entering Preston are enrolled in this school for review and for observation as to their ability and status for classroom work. The instructor makes recommendation for the boy's permanent assignment in from one to four weeks after he enters the class.

School "two" gives instruction in arithmetic, English, spelling and writing for those who need a review of primary grade work. The morning section is made up mostly of foreign boys and represents an Americanization project.

School "three" gives a review of the fifth and sixth grades in the above subjects.

School "four" comprises review and advanced work for boys who have completed seventh and eighth grade work before coming to Preston. This school is organized on the departmental plan and special instruction is given in mathematics, English, history and civics.

School "five" offers work of senior high school grade and is organized in the same way as school "four."

1. Mathematics.

The average age of the boy in the mathematics classes of the upper school is about eighteen. The majority of the boys have had an eighth grade education and some few have had from one to two years in high school. The boys entering this department are assigned to one of two schools. Number "four" offers work in fundamentals as applied to concrete objects such as steel bars, lead pipes, gears, etc. Practical vocational problems applicable to conduit wiring, boiler connections, etc., are touched upon. The course is planned primarily for the boys who will not go to high school but will get some of the fundamentals that are applicable to his trade. School number "five" offers work in the elements of algebra, geometry and trigonometry. This work is correlated with the respective trades but is primarily designed for the boy who desires to continue his high school work after he leaves the institution.

The boys on the whole like mathematics and take real pleasure in working out problems, especially those that are practical. The majority feel that the study of mathematics has a real "bread and butter" value as well as a value which insures social efficiency. The individual method of teaching is used; that is boys are given work in the kind of mathematics that they most need. Business arithmetic and farm accounting are also given where boys are taking the commercial course or engaged in farming at the institution.

2. English.

The average age of the boy in schools "four" and "five" is 17.6 years and the average education is 8.4 grades.

The English of schools "four" and "five" covers business writing, simple narration and spelling. There is an effort made to interest the boys in good reading matter.

Most of the instruction is individual owing to the fact that boys are coming and going. But in English and current topics it is possible to do group work. This is much more satisfactory as it is possible to arouse more interest and enthusiasm.

3. History and Civics.

The work of history is offered to boys in schools "four" and "five" and is, as nearly as may be, a continuation of the work already done in outside schools. For this reason, individual instruction entirely is given. The course includes ancient, medieval and modern history, but the history of the United States is given the most important place.

One day each week is devoted to the study of civics. National, state, and local institutions are studied and attention is directed to all societies and agencies which have for their purpose social betterment. This course is given with a special view to instilling ideals of good citizenship and a sense of personal responsibility.

4. The Commercial Department.

In selecting boys for the commercial class, their fitness for the various office positions open to boys in the institution is kept in mind since a boy's success in one of these positions is the indication of his adaptability to clerical work after he has left the school. A good office-type boy is clean in his habits, well mannered, intelligent and somewhat attractive in person. He must have a common school education, and a year or two of high school is most desirable. He receives a thorough training in stenography and typing in the school. As soon as possible he is given office work for part of the day, and continues his work in the school-room.

The grind of the office work tests his staying ability, and his work under a competent official teaches him loyalty, gives him a practical idea of what the business world expects of him, and develops in him a sense of pride in being an essential part of the institution. The officers in charge of the boys are to be especially commended for the keen interest they have taken in helping to make them efficient.

A number of boys trained in this class are now holding responsible positions in the business world.

At present, the school is offering only a half-day in the commercial class, but it is our hope soon to add sufficient commercial work to make a full day's program.

5. Mechanical Drawing.

The mechanical drawing class is made up of boys who have had some high school training or its equivalent. As far as possible, the work is made to correlate with the trades and shop work, enabling a boy to study out his problem on paper before putting it into practice.

The character of the work is very similar to that of high school mechanical drawing, except that the instruction is individual rather than group.

The objects drawn cover a wide range and the aim is to develop the technical skill of the student and to train him to visualize and reproduce simple objects by drawing. A minimum of ten preliminary plates must be completed satisfactorily before the boy can take up any special problems, and then an attempt is made to stimulate as much interest in machine, architectural and sheet metal drawing as possible. Some boys, who have had previous training are allowed to take up more advanced branches, such as reading and making of tracings and blue prints and of designing special apparatus or machines.

6. The Grammar Grades.

A. Schools "One" and "Three."

Upon entering the Preston School of Industry, the average boy is able to do addition, subtraction, and multiplication, including problems involving those processes. He is able to write an attempt at composition which is very poor in sentence construction, and almost entirely lacking in punctuation and capitalization. The average writing is legible, but the formation of the letters is irregular and the spacing poor. The spelling is equivalent to fourth grade work. The average boy ranks higher in reading than in other subjects. He is able to read and report upon high fifth or low sixth grade reading including history, geography, and general reading.

The subjects taught in school "three" are arithmetic, oral and written, English, spelling, literature, geography, history and citizenship. Writing is taught incidentally with all written work, striving for better formation of letters, and neat, legible writing. Arithmetic is undoubtedly the most important subject, because in any trade a boy must be able to figure in order to compute his wages or carry on business of any kind. Reading and composition are also important, in order that he may know the progress the world is making, and be able to communicate with others in a business and social way.

There is close correlation between the school and the trades, particularly in mathematics. The boy is pleased when given problems pertaining to his trade. He writes a better, more interesting composition upon matters connected with his trade because it is something concrete, which he understands. The individual method of teaching is used.

B. School "Two."

In this school the average age of the boy is eighteen and he has not been beyond the fourth grade. A very few have done nothing more than add and subtract simple numbers. Spelling and simple sentences are very poor. He improves in arithmetic more than in any other subject. In most cases he learns to work the problems of simple nature. He also learns fractions. The boy remains in school about three or four months, on an average. English, reading, arithmetic and citizenship are taught. The English speaking boy in school "two" is limited in his ability to retain but by constantly reviewing the work it becomes fixed so that when he has been in the school a short time he is correcting some of his common errors such as:

"I can't see *them* examples," to "I can't see *those* examples."
"I *seen* Perez in line," to "I *saw* Perez in line."

The English-speaking boy who has not had the opportunity of schooling, or is retarded, should be given enough arithmetic so that he is able to be his own timekeepr, keep his personal accounts, add simple bills. In this way he is not entirely dependent upon others. In English he should be given enough oral work so that he is able to express himself both clearly and correctly. His written work should prepare him to write good sentences and construct friendly and business letters.

In most cases the work is individual. Since the boys enter at irregular periods it is difficult to do group work. However, group work is worth while because there is always competition.

Each boy should be taught "citizenship." He has made a mistake; that is, he has not lived according to the laws laid down by our government, so he is deprived of social privileges. Therefore, give him a chance to think over the importance of self-respect and respect to others by giving a course in "Citizenship and Government."

Generally speaking the boy's attitude toward the school is very good. At first, he is ashamed of his retardation but when he finds that the school is not criticizing him but helping him, he works with a will.

7. Americanization.

The aim in the Americanization class is to prepare the boy to take his place as a good American citizen when he leaves Preston. In order to accomplish this work he must learn to speak and understand the English language. When the foreign boy enters the school department he is usually timid and does not respond. Bringing out this response requires much time and patience. When the boy's confidence is gained he will respond. The foreign boy is a most serious and anxious worker. He feels the necessity of the English language in order to compete with others. He learns by speaking. Therefore much oral work is given. He must have an understanding of all words used. A simple but clear vocabulary is used and practical subjects are chosen that are of interest to the boy. The English language must be used in the classroom and the boy finds in order to make his wants known he must learn to express himself in English. He, therefore, learns the words or expressions much sooner through necessity and is encouraged and advanced as rapidly as he shows progress. He is greatly interested in the laws of the United States and thinks if he had known our language he would have avoided his trouble. The readers used in the work are those which give some knowledge of the United States government and ideals of its people.

Since the boy has been committed to our care it is our duty to provide him with enough English so the same mistakes will not be repeated through ignorance of the English language.

8. Music.

The band has a triple objective. It furnishes music for the military drill, teaches its members to play the various instruments and affords entertainment. The military drill is a necessary part of the education of each cadet in the Preston School of Industry. It teaches him to be orderly and concise, to obey commands. Each Sunday morning there is a dress parade at which the band is a necessity.

The teaching of the members is organized into two divisions; the second band for the beginning class and the first band for the older members. The beginning class averages a roll call of twenty-two, while the first band averages twenty-six. The boys are accepted without any knowledge of music or musical instruments. They learn, in a remarkably short time, to play well enough to enter the first band.

There are boys who have been able to enter the music profession because of their rapid progress here. The boys who are naturally talented and care enough to make rapid strides find it is a large factor in making them successful on parole. Where there is a desire to specialize in music, efforts are made to give the boys an opportunity to progress. Perhaps the most commendable part of the musical training is that it

is given in addition to a trade and schooling since the practice period for the first band is in the evening. It virtually gives each member a time and one-half program. To join the band is considered a privilege and has a steadying effect on the boys. Also each member is given units of credits for his work. A part of each Sunday morning's assembly is selections by the band. Its greatest triumph is the week at the State Fair in Sacramento. The State of California invites the boys to come; offers them accommodations and amusement for an entire week. They play afternoons and evenings on the grounds and for the exhibits. There have been many trips for celebrations on patriotic occasions and picnics.

For the entertainment side there is, in addition to the band, the orchestra, composed of some of the more talented members. The orchestra often is asked to play for benefit dances and for school and church entertainments.

9. Physical Education.

Boys need physical activity. The pent up energies of youth can best be directed into expression through organized athletics. An athletic director devotes most of his time to coaching and supervising athletics. Teams compete with outside schools, including high schools, state teachers colleges, junior colleges, and the University farm school. The teams during the past year have been successful in winning a majority of the games played with outside teams.

The work of the representative teams excites interest in athletics among the boys of the various companies. Daily competition between company teams, which compete for the championship in the various sports, creates much wholesome activity. Football, needless to report, is the most popular sport. Baseball and basketball are played in season. Handball is also played by the boys at the recess periods. The swimming pool is a source of much pleasure and comfort to the boys during the summer months.

Preston has set a high standard for clean sportsmanship among the schools of this part of the state. Many boys learn valuable lessons in fair play and honesty on the Preston athletic field.

10. Military Drill.

Upon his arrival the boy is assigned to the receiving company where his first thirty days are spent in drilling and learning the rules of the school. The object is to first secure his attention in order that he may get a good start in mental, moral and physical development. During the rest of his stay, for his continued development, he is required to drill ten minutes each day. This drill is taught without arms, from the Infantry Drill Regulations in the School of the Soldier and the School of the Squad.

Attention or concentration of the mind is the quality which the average boy needs. He must memorize the "Position of the Soldier" and is very strictly required to stand in such a manner at proper times. This calls for mental alertness and gives him the appearance of dignity, neatness and confidence. He is now prepared for further work in Preston because he has learned how to pay attention to what he is told.

A battalion parade and review is held once a week. Judges are always present to name the best appearing company, which causes much competition and enthusiasm.

Every two months a competitive drill is held after which the best drilled company is awarded the honor of carrying the "Colors."

VOCATIONAL PLACEMENT.

The problem of vocational placement is important and is handled through a trades council consisting of the superintendent, assistant superintendent and detail officer.

As soon as convenient after his arrival in the institution a boy is given an entrance interview by a member of the trades council. A blank is filled out upon which is tabulated the data which determines his subsequent placement in a trade.

After he has been in the school six weeks his name comes before the trades council for consideration for a trade. At that time concrete information is at hand concerning his past school, work and conduct record. Before his name is placed upon the eligible list for a trade, the following items are considered. These are listed here in the order of their importance:

1. What is his real ambition?
2. What kind of work will he be able to follow when he leaves the Preston School?
3. What are his qualifications for the trade as judged by:
   - *a* Previous experience.
   - *b* General intelligence.
   - *c* Physical ability.
4. How about his general conduct record since entering Preston? Is he trustworthy?

The difficult task of stabilizing the average Preston School boy through proper school and vocational training can be more nearly realized when the following data is closely analyzed:

A study of forty unselected cases shows that the average cadet has been out of school 3.8 years and has had a work record covering 2.2 years; that is, he has been unemployed 42 per cent of the time since leaving school. The average length of time spent in a single occupation is eight or nine months. During that time he has changed jobs two or three times. Generally, these boys overrate their ability and their trade knowledge is scattered and inaccurate. Very seldom has a boy worked the major portion of his apprenticeship in any one trade before entering Preston. The instructor has more difficulty, in some cases, teaching a boy who claims to be more experienced than he really is, than one who has no knowledge of the trade. Generally speaking, boys receiving apprenticeship trades instruction advance about twice as rapidly in Preston as they do on the outside in the same length of time.

The boys are taught while "on the job," most of the projects being maintenance jobs. Most boys take a pride in doing their work right because they know it is real production work and must stand the test of actual use. It is difficult sometimes to secure work suitable to the abilities of all the boys in any one trade. The simple jobs are handled

by the new boys while the more difficult work is done by the more experienced boys.

In the past year a new laundry has been built and ample modern machinery installed. A new machine shop is nearing completion and with more room and better equipment, a larger number of boys can be accommodated in this—the most popular trade at Preston. Ample equipment in every shop means more effective training for the boys.

An average of two hundred and one boys have been receiving trades instruction daily for the past year. Of this number one hundred and twenty-five or 60 per cent were working all day. This does not include boys working in discipline companies or extra squads, where pick and shovel and wheelbarrow work is done. There is no training more valuable for boys who have not learned how to do a real day's work than this type of manual labor, especially when it is well organized and each boy is required to do his quota. After a boy has learned the value of a real day's work and has gained confidence and self-respect then he is ready to learn a trade.

Trade training is offered in the following lines of work: Dairying, poultry husbandry, general farming, horticulture, vegetable garden, landscape gardening, cabinet making and mill work, carpentering, masonry, electrical work, painting, plumbing and sheet metal work, auto repairing and machine shop practice, blacksmithing, steam fitting and oil firing, baking, butchering, cooking, printing, shoemaking and repairing, tailoring, laundry work, photography and clerical work.

There are twenty-four trade and agriculture instructors, six of whom have charge of farm departments.

THE FARM.

The farm activities have been materially increased during the last year. The thirty-five acres of bottom land purchased from John Riley, have been used for intensive gardening, producing all the fresh vegetables used by the school, besides furnishing a good supply of strawberries and an abundance of cantaloupes and enabling us to can three thousand gallons of tomatoes, or a year's supply.

The thirty acres of fruit trees and vines set out last biennium have done well and will come into bearing during this biennium. In fact the vines have produced a fair crop of grapes already this year During the year just closed we have added approximately ten acres of Thompson seedless and muscats to our vineyard, which will produce all the table grapes and raisins needed by the school.

Our alfalfa acreage has been increased to sixty acres, about thirty acres of which have been leveled and checked during the last year and will be seeded this fall. This will materially aid us in producing sufficient hay for our entire herd. Owing to the shortage of water this season our crop of alfalfa was limited. We feel, however, that now since our water system has been repaired we will not again suffer such a shortage.

The poultry department has been put upon a paying basis and up to the end of the fiscal year produced all the eggs needed by the school at a cost of seventeen cents per dozen. Our plant, however, is not sufficient nor suitably located to produce the best results and we recommend a small appropriation to pay for moving to a better site.

The dairy herd has paid well during the last two years, producing all the milk, cream and butter used by the school. Owing to the shortage of feed on account of dry season the cost of production was higher than it would otherwise have been, but we were even then able to produce our milk at a cost of eighteen cents per gallon. We find fresh milk to be the most wholesome and satisfactory food for the boys. Our herd is too small to produce as much milk as the boys should have for the best results and we most earnestly recommend the purchase of at least six purebred Holstein cows. This we feel to be absolutely necessary to take care of the rapidly increasing population. Our dairy is under the care of an expert dairyman and special care is taken at all times to keep the tubercular cows segregated from the others. All milk is pasteurized. Our dairy house is at present inadequate, and we recommend that it be remodeled in order that it may be made more sanitary, and the work be more efficiently done.

In addition to farming our own land, we have this year farmed two hundred acres of land owned by the Philadelphia Quartz Company, fifty acres of which is heavy bottom land, and the rest upland. We drained the bottom land, and planted forty acres to barley, and ten acres to beans, which, considering the dryness of the season, produced fair crops. This land we are working on shares with the owner, paying one-third of the harvested crop. Our farm equipment is inadequate to our needs, and we recommend particularly the purchase of a Fordson, and two span of farm horses.

NEW CONSTRUCTIONS AND REPAIRS.

During the two-year period ending June 30, 1924, the following construction work was completed:

1. The Henderson dam was raised ten feet, increasing the capacity of the reservoir from 300 acre-feet to 550 acre-feet.
2. Six thousand feet of ditch on the water system was concreted, and approximately 800 feet of wooden flume was built on the upper ditch.
3. A new laundry building was erected, and new machinery installed.
4. Two cottages, costing $5,000 each, were completed for the business manager, and the assistant superintendent.
5. A new machine shop 40′ x 160′ is under construction.
6. The refrigeration and ice plant was completely overhauled and enlarged.
7. The central kitchens were repaired, and new ranges installed.
8. The porches on the administration building were rebuilt.
9. The trades building has been partially remodeled and repaired.
10. Two new hog houses, with a capacity of 30 sows each, were built.
11. Many minor repair jobs were done on the buildings, amounting to approximately $15,000.
12. Approximately $2,000 was spent in piping the farm for irrigation.

INSTITUTIONAL NEEDS.

The growth in population creates problems from many sources, and calls for a general expansion of the classroom program, shop facilities, and maintenance and operation departments.

The most urgent needs are:

A segregation and detention unit for disciplinary, and unresponsive cases, new hospital and receiving building, school building, tailor shop, and farm cottage.

Appropriations for new buildings, equipment, and repairs amounting to approximately $450,000 should be made at the next session of the legislature if the Preston School of Industry is to properly care for the delinquent youths of the state between the ages of fifteen and twenty-one that need institutional training and supervision.

PAROLE PROGRAM AND ITS RESULTS.

Encouragement and recognition are proving more satisfactory in the reformation of youths in the Preston School of Industry than punishment and restraint.

When a new recruit arrives he soon learns that by following the rules of the school and by good behavior he will be promoted each month and will reduce the time required to earn his right to make application for parole from twenty-four months to fourteen months. He also learns that if he can hope to receive a position or the kind of work he prefers to follow he must gain the confidence of the instructors and the members of the Trades Council. This confidence is gained by the youths who are alert, trustworthy and reliable. Promotion to better living conditions in cottages and honor companies is obtained in the same manner by those who hold themselves up to the higher standards of conduct and trustworthiness.

When a cadet has earned the required number of credits entitling him to make application for parole a definite program of conduct, employment, and finance is explained to him.

It is further explained to each cadet making application for parole that there are three different kinds of discharge papers issued by the Preston School.

Ordinary release or dishonorable discharge, issued to those who do not try to meet the requirements of the parole agreement or who get into trouble while on parole.

Honorable discharge, awarded to the average youth who conducts himself fairly well but who changes employment frequently and is not well established in an occupation.

Diploma of honor, for those who follow the parole program conscientiously, become well established in a regular occupation, and make satisfactory plans for saving and conserving their finances.

How to earn the diploma of honor (which is signed by the board of trustees of the Preston School, the superintendent, and the Governor of the state) and thus establish himself in his community as a good citizen at the age of twenty-one is explained to each cadet before he makes application for parole and every cadet signs a paper containing five paragraphs which is a statement of his program of parole and agrees to use his best efforts to measure up to each of the five requirements:

First: I will properly fill out and mail a vocational report regularly the first of each month, using the regulation "monthly vocational report blanks" furnished for that purpose.

Second: Knowing that the object for which I am released on parole is to give me the opportunity to learn a trade or become established in some good and useful

occupation that will give me a good start in life by the time I am the age of twenty-one, I hereby agree to use my best energies to make good in my employment and earn a reputation for honesty, faithfulness and industry.

Third: I agree to save money from my earnings regularly and maintain a savings account in some bank as soon as possible after my release and during the period of my parole.

Fourth: Believing that my future success and happiness depend on the way I conduct myself in society, in business and in my home, I agree to refrain from evil practices, such as late hours at night, excessive smoking of cigarettes, deception and other influences detrimental to my best interests and welfare, and will keep my general conduct record satisfactory and my habits good.

Fifth: I agree to keep out of trouble in the future, and will avoid such companionships as I have reason to believe would not be approved by the school authorities, knowing that if I associate with evil companions I will be tempted to loiter around pool and billiard halls, dance halls, cigar stores, prize fights, and other questionable resorts, and in doing these things would be inviting trouble.

A credit of twenty per cent is awarded for meeting the requirements of each of the five paragraphs in the agreement. A 100 per cent record on parole is maintained by every cadet who meets the requirements of all five of the paragraphs in the agreement. A diploma of honor is awarded to all those who maintain a 100 per cent record while on parole.

The parole officer visits the youths who are on parole in their homes for the purpose of encouraging them in every way possible and helping them meet the requirements for a 100 per cent record and qualify for the diploma of honor.

The following blank is used in making reports on the interviews and to help the parole officer check up on the record being made by the youth:

Vocational, Social and Investment Statement of Youths Released From the Preston School of Industry on Parole

Case report by.....Date.....
Youth's name.....Address.....
Name of employer.....Address.....
Kind of work.....Wages, $.....
Recent changes.....
Investments.....

REPORTS
20—On time; satisfactory
15—Sent report late
9—Reported when reminded
—Negligent; not interested
6—Reports only when personally interviewed

EMPLOYMENT
20—Regular; promotional; satisfactory
15—Irregular, or dissatisfied
10—Odd jobs and labor
5—Changeable; unsatisfactory; discharged
0—Refuses work; shiftless; wanderlust

SAVINGS AND INVESTMENTS
20—Regular and systematic
15—Occasional, then withdraws
10—Spends lavishly; selfishly
5—Spends foolishly; motorcycle; cut-down
0—Earns little; in debt; dishonest

GENERAL CONDUCT
20—Satisfactory; habits good
15—Smokes cigarettes; sleeps late
10—Out late nights; restless
5—Disagreeable at home; argues
0—Deceives; falsifies; profane

KEEPING OUT OF TROUBLE
20—No complaint of any kind
15—Bad associates
10—Pool halls; public dances; resorts
5—Gambling; drinking
0—Petty stealing; forgery; arrest

.....PER CENT

ATTITUDE—	TEMPERAMENT—	DISPOSITION—
Willing	Ambitious	Agreeable
Obedient	Enthusiastic	Good natured
Disobedient	Visionary	Obliging
Argues	Listless	Disagreeable
Obstinate	Moody	Bad temper
Exaggerates	Restless	Egotistical
Headstrong	Selfish	Spiteful

CHECK ESTIMATE IN COLUMN

	Superior	Above Average	Average	Below Average	Inferior
Intelligence					
Sense of Responsibility					
Trustworthiness					
Adaptability					
Stick-to-it-iveness					
Progress					

Associates.....Amusements.....
Offenses.....
.....
Educational.....
Living conditions.....
Remarks: .....
.....

Some business man or employer is enlisted who will act as a friend for each youth to advise and help him make his record 100 per cent and establish himself as a good citizen. The objects of parole and the opportunity given to help the youth make a 100 per cent record and earn the diploma of honor are explained to business men and employers who sign the agreement as advisors and friends.

ADVISOR AND FRIEND AGREEMENT.

City_____Date_____192__.

This is to certify that I am a resident of_____County, State of California, and that I am engaged in the business of_____

The applicant for parole from the Preston School of Industry_____has been known to me for_____years. I desire to help him secure his release and will act as his Advisor and Friend while he is on parole. I agree to employ him or help obtain employment for him when he is out of work and will advise and encourage him regarding his conduct.

I further agree to report promptly to the Parole Officer any unnecessary absence from work, bad associations or other influences detrimental to his best interests and welfare and will certify to the correctness or incorrectness of the personal monthly reports which are required of him by the Parole Officer.

Signed_____

Address_____

EMPLOYER'S AGREEMENT.

To help secure the release of_____from the Preston School of Industry, I hereby agree to employ him at the following kind of work: _____ and will pay for such services $_____per_____

Employer sign here_____

Name of company_____

Address_____

An average of about seventy-five per cent of the youths make good and earn wages ranging from a few dollars a week up. As they become better established in their positions their salaries are increased and show up more regularly in their reports. The following conservative statement by months will give an excellent illustration of the value of liberal parole which permits the youth to go away from the Preston School of Industry, under supervision, from one to three years before their commitment expires and earn their way while establishing themselves in an occupation or learning a trade.

1922—July	Youths on parole earned	$12,200	00
August	Youths on parole earned	12,562	50
September	Youths on parole earned	11,641	00
October	Youths on parole earned	12,480	25
November	Youths on parole earned	13,276	00
December	Youths on parole earned	13,812	20
1923—January	Youths on parole earned	13,100	00
February	Youths on parole earned	13,620	50
March	Youths on parole earned	14,700	00
April	Youths on parole earned	14,242	00
May	Youths on parole earned	14,367	00
June	Youths on parole earned	14,752	75
July	Youths on parole earned	15,862	00
August	Youths on parole earned	16,103	00
September	Youths on parole earned	16,247	50
October	Youths on parole earned	14,371	00
November	Youths on parole earned	13,685	00
December	Youths on parole earned	13,441	00

1924—January	Youths on parole earned	$11,227 80
February	Youths on parole earned	11,602 60
March	Youths on parole earned	11,986 00
April	Youths on parole earned	12,470 00
May	Youths on parole earned	13,241 50
June	Youths on parole earned	14,864 75
		$325,855 75

July 1, 1922, there were on parole	364
During the two years covered by this biennial report, there were transferred from the Preston School to the parole division	442
Total number of individuals in the parole division during the two years	806

The following discharge papers were issued during the two-year period:

Diploma of Honor	65	
Honorable Discharge	230	
Ordinary Release	113	408
Number on parole July 1, 1924		398

Seventeen per cent of those discharged from parole during the two-year period received the Diploma of Honor.

Seventy-four per cent received the Honorable Discharge and the Diploma of Honor.

Sixteen and one-half per cent received the Ordinary Release at the age of twenty-one (wanderers whose homes were in other states, addresses unknown and for whom no definite report can be made).

Eight per cent were returned to the Preston School for violation of parole.

One and one-half per cent were convicted of new offenses and sent to prison.

The question is frequently asked, "How do you secure employment for so many?" Our self-placement plan is the best answer to this question. When a youth is out of employment he is instructed how to secure a position for himself. A pamphlet entitled, "How to Secure Employment" is given him and the instructor or advisor accompanies him to help arrange the first two or three interviews. He is instructed to write the name and address of the firm and how to find out the name of the manager or the person with whom he should secure an interview regarding employment. In this manner sample interviews are given by the instructor until the youth learns how to arrange and conduct the interviews himself. When necessary the youth receives wages while seeking employment when he follows the self-placement program as outlined by the instructor.

This plan has a tendency to instill confidence in the youth when he learns to secure his own position and he values and appreciates the employment when secured through his own efforts. He becomes more self-reliant and is encouraged when he experiences the thrill of accomplishment and success instead of the depressing effect of failure.

Many youths on parole have been promoted to responsible positions who have learned to apply the principles contained in the following self-placement plan:

Instructions and Suggestions—How to Secure Employment.

By R. A. Lang.

First, decide what your work is to be—the kind of work you will most enjoy and for which you are best fitted. This is important, for when you are following work you like to do you will take more interest in it and obtain better results for both yourself and your employer.

Second, decide what firm, or company, or shop can give you the best opportunity for promotion and permanency. In seeking a position it is advisable to locate where you can establish yourself with a firm or company large enough to insure permanency and ample opportunity for promotion.

Third, write down on the first blank page in the back of this book the name and address of the company or shop where you have decided to apply for a position. Select the best place first, and then follow up by filling out all the blank pages in the book, or until you secure the position you want.

Fourth, inquire of someone and find out the name of the person who employs the help and write the name down. Get all the information you can about the employer and when will be the most opportune time for you to interview him. Prepare to make the interview successful. Are your hands clean? How about your finger nails? Your general appearance—clothing, shoes, standing (erect) position, walk, attitude—all have a tendency to help you gain the confidence of your prospective employer.

Go directly to the employer of the help, and address him by name. Say to him: "Is this Mr. ———? My name is ———. I desire to secure secure employment with your company. I am willing to work and follow instructions." After the interview write down what the employer said as near as you can remember.

Always bear in mind you are selling your services when interviewing an employer regarding a position for yourself. When you secure the position it is then up to you to return full value in the best service you can give. Do your work a little better than someone else would do it and always try to do a little more than is expected of you. Remember you have something to sell every day—THE BEST SERVICE YOU CAN POSSIBLY GIVE. Use your head as well as your hands. Study how to improve yourself and increase your abilities. The way you do your work and the progress you make is of the utmost importance. Your life, your living, your happiness and contentment, depend largely upon the way you do your work and what you earn.

In whatever position you find yourself, use it as a stepping stone to something better by performing the tasks assigned you so well that your employer will be entirely satisfied when he pays for the services you have sold him. He is your customer and the best advertisement or recommendation you can get is a satisfied customer. Your future success depends so much upon the reputation you make from day to day in the way you do your your work.

Trade instruction is given the youth while in the Preston School and his release on parole depends on the upbuilding of character or good conduct and efficiency in his work or trade advancement. He is taught to realize that character is expressed in terms of work and that the better or higher grade of work earns his release more rapidly by an increase in the number of credits he receives. As soon as possible after a new recruit arrives in the Preston School the parole officer has an interview with him regarding the kind of employment he would like to follow after graduation and an investigation is made of his home and possible employment so that he will receive the right kind of instruction and trade training while in the school.

The following summary of four hundred and eight youths who were discharged from parole at the age of twenty-one during the last two years and the example of what it is possible for one youth to accomplish in each of the occupations followed while on parole, emphasizes the importance and value of character upbuilding and trade training in the Preston School:

EXAMPLES.

	Number in occupation	Average wages at beginning	Average wages two years later
ARMY AND NAVY (Albert W— enlisted in the Third Corps Area of the United States Army and his superior officer wrote the Commanding Officer as follows: "This soldier since reporting at this station has been energetic, conscientious and is a model of neatness and a credit to the organization and the military service. He has been commended by the Commanding General, Third Corps Area, for excellent performance of duty. It is respectfully requested by the Commanding General of the Third Corps Area that this soldier be given consideration to a higher grade, either Sergeant or Staff Sergeant, in recognition of his activities for his regiment and for the Army.")	14	$32 a month	$32 a month
AUTO APPRENTICES AND HELPERS (Jack P— worked in the auto repair and machine shop while in the Preston School. A position was secured for him in a small machine shop as an apprentice at $18 a week. He was promoted until he held a responsible position with the Pacific Oil Company at $175 a month.)	39	$15 to $18 a week	$21 to $27 a week
BAKERY APPRENTICES AND HELPERS (Mitchell M— worked in the bakery while at the Preston School of Industry. A postion was secured for him in a bakery paying $9 a week. He followed the same trade and was promoted to the position of foreman and now receives $36 a week.)	11	$15 to $21 a week	$21 to $36 a week
BUILDING AND CONSTRUCTION WORK (Milton D— had an unsatisfactory record while at the school, violated parole once and came back to prepare for another start. Employment was then secured for him as a carpenter's helper at $4 a day. He has now established himself as a regular carpenter, married, and settled down in a home of his own.)	29	$18 to $24 a week	$24 to $36 a week
ELECTRICAL AND WIRING (John S— was employed in the heating plant and electrical work while at the school. After his parole he followed his trade wiring houses and taking small contracts in electrical work. He later secured a position in a large tourist hotel as assistant to the engineer and was promoted to the position of electrical engineer, receiving $150 a month, room and board.)	12	$15 to $21 a week	$24 to $42 a week
FARM AND ORCHARD (Thomas T— worked on the ranch while at the Preston School of Industry and studied horticulture by correspondence with the U. of C. He also took a summer course at the Davis Farm. When he was paroled he became interested, with four other young men, in a large prune orchard in the Santa Clara Valley. They now own the ranch and are paying for it from the crops.)	59	$40 to $65 a month, room and board $2.50 to $4 a day	$40 to $65 a month, room and board $2.50 to $4 a day
LABOR AND IRREGULAR WORK (Samuel S— worked as a teamster on the farm while at the Preston School. A position was secured for him as a laborer at $4 a day when he left on parole. He followed the same line of employment until he learned concrete and at the time of his discharge was earning $6 a day.	28	$2.50 to $4 a day	$2.50 to $4 a day
MACHINIST APPRENTICES AND HELPERS (Ira C— had a hard time of it at the Preston School, spending most of his time in the Extra Squad at hard labor. He worked three months in the heating plant before his parole. A position was secured for him in a a machine shop at $8 a week. He remained with his position, received several promotions, and now earns $28 a week.)	46	$15 to $18 a week	$24 to $35 a week
OFFICE AND CLERICAL WORK (Beard D— kept the records in the shoe shop and studied bookkeeping while in the school. A position was secured for him in a machine shop as helper and assistant in office work at $21 a week. He was promoted until he held the position of production superintendent at a salary of $100 a month. He later secured a position as assistant bookkeeper with the McCullough-Fagan Lumber Company earning $165 a month.)	34	$12 to $21 a week	$25 to $30 a week
PLANING MILLS AND BOX FACTORIES (Harley C— worked in the Commissary and Electrical Squad while at the school. Employment could not be arranged for him in electrical work on parole but a position was secured for him in a box factory. He became an expert box maker and now earns good wages ranging from $6 to $9 a day with the Earl Fruit Company.	18	$15 to $18 a week	$21 to $36 a week
PORTER AND DINING CAR SERVICE (Dominado O— worked in the House Squads and cottage kitchen while in the school. A position was secured for him as house boy in an apartment house at $60 a month and a room. He was promoted until he received $80 a month and then secured a position in Berkeley to work his way through the University of California.)	23	$25 to $60 a month	$40 to $65 a month

EXAMPLES—Continued.

	Number in occupation	Average wages at beginning	Average wages two years later
PLUMBING AND SHEETMETAL WORK (Wesley L— worked in the sheetmetal trade while at the Preston School. A position was secured for him as an apprentice in a sheetmetal shop where he worked steadily and went to night school to study mechanical drawing for two years. At the time of his discharge from the school he was receiving $6 a day.)	18	$15 to $18 a week	$24 to $33 a week
PRINTING (Ronald M— worked in the printing office while here and a position was secured with the Dettmer Printing Company at $18 a week. He remained with the same company during the two years of his parole and was promoted to $25 a week.)	12	$15 to $18 a week	$21 to $24 a week
RESTAURANT, HOTEL AND CAFETERIA (Clarence Y— (colored boy) was a cook in one of the cottages while at the school. A position was secured for him with the Southern Pacific dining car service when he was paroled. He later secured a position as second cook in a cafe and was promoted to the position of chef at $150 a month.)	29	$15 to $21 a week	$21 to $24 a week
TRUCK DRIVING AND AUTO DELIVERY (Clifford S— was employed on farm and tractor while in Preston School. A position was secured for him as a swamper on a truck at $20 a week. He later became a truck driver and secured a position driving a delivery truck for the Armour Packing Company at $33 a week.)	35	$15 to $24 a week	$24 to $33 a week

It is better to prevent the commission of crime than to punish the offender after the damage is done. Between the ages of sixteen and twenty-one the youth should be taught to assume the responsibility and to look forward in his education and trade training to the time when he will be called upon to assume the responsibilities of a man and a good citizen.

The sort of man and citizen the wayward youth becomes depends to a large extent upon the opportunities we are able to place within his reach to accomplish something worth while, or a definite program that will stimulate mental activity and arouse ambition to complete the task and prove it can be done.

Our parole program with a Diploma of Honor awarded to the youth who is successful in maintaining a 100 per cent record of accomplishment has a stimulating and beneficial effect on the cadets in the school as well as those who make application for parole. Nothing we can say emphasizes this fact more forcibly than is expressed in the sentiments of appreciation contained in letters from youths who received Diplomas of Honor.

Dear Mr. Lang:

Your letter and the Preston Diploma received. It certainly helped me and I feel now that I have partially atoned for my error. As I look back over the last three years I feel that I have learned some valuable lessons, one of which I will not soon forget.

I wish to thank you not only for the Diploma, but also for the kindness you have shown me at times when I needed it. I am glad to know that you still hold an interest in my life and future and want to assure you that this interest is mutual.

Henry P.

Dear Mr. Lang:

These few lines are to acknowledge receipt of your letter with my Diploma enclosed which I had hoped to earn before Thanksgiving and now am rewarded for my efforts. I wish to thank you for your kind letter and good wishes and your confidence in me, which I will surely try to live up to.

I know you will be pleased to hear that my salary has been increased since my last report to $30.00 a week.

R. J. M.

Dear Mr. Lang:

I was one happy boy when I received the Diploma and read it, and thank you for your interest.

I also wish to thank the Governor and the Superintendent and others who signed by Diploma and I expect to do just as well from now on as I did when I had to send in my monthly reports.

Malcolm B.

Dear Mr. Lang:

Words are inadequate to express my sincere thanks to you and those concerned for sending me my Diploma. I do not look upon it as a graduation from something lower to the higher, but as one who has proven what those concerned in him thought he could do.

My ambitions do not cease just because I am free to do as I please, but will keep on striving for the things that are worth while.

Thomas T.

More and more we should realize the importance of making the State Industrial School, established for the training, education and character upbuilding of the wayward youth, an open door of opportunity for all who enter.

Intensive, scientific and sympathetic consideration must be given to this problem if we would stem the tide of the onsweep of crime. We must learn how to inspire and develop in these youths a spirit of fairness, a willingness to work, assume responsibilities and a wholesome desire to make of themselves worthy, dependable American citizens.

O. H. Close,
Superintendent.

STATISTICAL TABLES.

TABLE NO. 1.

Enrollment Statement.

	June 30, 1922	June 30, 1923
Actually in institution	447	496
Those on parole	322	364
Those on furlough	35	31
Escapes at large	47	53
Totals	851	944
Added to rolls during year:		
New commitments	409	589
Transferred from Whittier State School	10	8
Transferred from Sonoma State Home		1
Totals	419	598
Total enrollment during year	1,270	1,542
Removed from rolls during year:		
Discharged from institution	54	29
Discharged from parole	119	111
Order of court from furlough	1	2
Released, order of court	34	67
Discharged from furlough account prison sentence		1
Expiration of term on parole	44	54
Transferred to Whittier State School	2	8
Expiration of term on escape	29	25
Discharged from furlough	8	7
Discharged from escape account prison sentence	3	7
Discharged from parole account prison sentence	13	5
Died in institution		1
Transferred to Sonoma State Home		4
Returned to court	18	4
Deportation		160
Died on furlough	1	
Deported from escape		1
Died while on escape		1
Total passed out	326	487
Total enrollment at end of year	944	1,055

TABLE NO. 2.

Statement of Actual Population in Institution.

	June 30, 1922	June 30, 1923
In institution at midnight	447	496
Received during year:		
By new commitments	409	589
By recommitment from parole	9	18
By return from parole	31	18
By return from furlough	13	19
By return from escape	13	15
By recommitment from furlough	----------	2
By recommitment from escape	1	1
By transfer from Whittier State School	10	8
By transfer from Sonoma State Home	----------	1
Total received	486	671
In institution during year	933	1,167
Passed out during year:		
By discharge	54	29
By order court	34	67
By parole	253	236
By furlough	27	64
By return to court	18	4
By escape	49	37
By transfer to Whittier State School	2	8
By death	----------	1
By deportation	----------	160
By transfer to Sonoma State Home	----------	4
Total passed out	437	610
Total population at end of year	496	557

TABLE NO. 3.

Statement of Paroles.

	June 30, 1922	June 30, 1923
On parole at midnight	322	364
Paroled during year	253	236
Paroled from furlough	4	4
Paroled from escape	1	----------
Totals	580	604
Discharged from parole	119	111
Term expired on parole	44	54
Returned from parole	31	18
Recommitted from parole	9	18
Discharged from parole account prison sentence	13	5
Totals	216	206
On parole at end of year	364	398

TABLE NO. 4.

Statement of Furloughs.

	June 30, 1922	June 30, 1923
On furlough at midnight	35	31
Furloughed during year	27	64
Totals	62	95
Paroled from furlough	4	4
Discharged from furlough	8	7
Recommitted from furlough		2
Order of court from furlough	1	2
Returned from furlough	13	19
Escaped from furlough	4	2
Died on furlough	1	
Discharged from furlough account prison sentence		1
Totals	31	37
On furlough at end of year	31	58

TABLE NO. 5.

Statement of Escapes.

	June 30, 1922	June 30, 1923
Escapes at large at midnight	47	53
Escaped during year	49	37
Escaped from furlough	4	2
Totals	100	92
Captured	13	15
Recommitted from escape	1	1
Term expired	29	25
Paroled from escape	1	
Discharged account prison sentence	3	7
Deported from escape		1
Died while on escape		1
Totals	47	50
Total escapes at end of year	53	42

TABLE NO. 6.

Enrollment by Months.

	1918-19	1919-20	1920-21	1921-22	1922-23	1923-24
July	276	366	376	400	446	472
August	257	352	374	409	446	468
September	251	330	361	392	420	416
October	273	328	356	410	431	440
November	249	344	351	424	441	467
December	259	345	357	435	441	491
January	289	365	372	445	447	505
February	324	361	383	450	453	528
March	356	376	382	454	468	535
April	371	388	378	445	471	513
May	375	380	390	447	489	521
June	365	383	396	447	496	557

TABLE NO. 7.

Showing Summary for Years.

Year	Received				Discharged	Paroled	Order of court	Returned to court	Deported	Escaped	Died	Transferred to Whittier	Transferred to Sonoma	Furlough
	New	Returned	Transferred from Whittier	Transferred from Sonoma										
1894-95	174				6	3				7	2			
1895-96	59				10	4				10				
1896-97	79				20	47				17	1			
1897-98	28				51	14				7	1			
1898-99	51				51	5					2			
1899-00	31				22	21				7	1			
1900-01	31				37	20								
1901-02	59				33									
1902-03	36				37									
1903-04	63				33									
1904-05	80				23	10								
1905-06	90				28	40								
1906-07	92				31	46								
1907-08	146				7	40								
1908-09	182				17	82		2						
1909-10	201	2			34	162		12		3				
1910-11	199	29			17	179	6			2				
1911-12	192	36			29	195	16	5		13	2			
1912-13	253	61	137		24	193	33	3	3	18	4	14		2
1913-14	248	126	8		64	124	51	5	2	66	4	45		13
1914-15	269	162	2		56	223	21	16	4	125	2	41		9
1915-16	268	79			57	215	19	13		38	2	1		16
1916-17	213	67			55	162	23	2	2	8		2		27
1917-18	192	46	5		76	188	25	25		41		6		18
1918-19	239	33	53		42	133	20	10	2	9	1	7		15
1919-20	282	49			32	177	18	14	4	38	2			28
1920-21	299	71	12		43	208	15	21	1	58	2	4		17
1921-22	390	58	11		48	202	53	35		32	3			35
1922-23	409	67	10		54	253	34	18		49		2		27
1923-24	589	73	8	1	29	236	67	4	160	37	1	8	4	64
Totals	5,444	959	246	1	1,066	3,182	401	183	178	585	30	130	4	271

TABLE NO. 8.

Showing Counties from Which Boys Were Received During the Biennial Period Ending June 30, 1924.

Counties	1922-23	1923-24	Total
Alameda	34	36	70
Alpine			
Amador			
Butte	2	2	4
Calaveras			
Colusa		1	1
Contra Costa	5	2	7
Del Norte		1	1
El Dorado			
Fresno	21	33	54
Glenn		2	2
Humboldt	4	1	5
Imperial	3	5	8
Inyo	1	1	2
Kern	5	6	11
Kings	1	7	8
Lake			
Lassen	1	1	2
Los Angeles	234	314	548
Madera		2	2
Marin		1	1
Mariposa			
Mendocino			
Merced		1	1
Modoc		1	1
Mono			
Monterey			
Napa	1	4	5
Nevada	1	4	5
Orange	1		1
Placer	25	20	45
Plumas		5	5
Riverside		1	1
Sacramento	9	18	27
San Benito	16	22	38
San Bernardino	10	5	15
San Diego	22	51	73
San Francisco	35	49	84
San Joaquin	5	14	19
San Luis Obispo	9	2	11
San Mateo	2	2	4
Santa Barbara	4	7	11
Santa Clara	12	16	28
Santa Cruz	1	1	2
Shasta	4	2	6
Sierra			
Siskiyou			
Solano	1	1	2
Sonoma	5	6	11
Stanislaus	3	2	5
Sutter		1	1
Tehama		1	1
Trinity			
Tulare	5	15	20
Tuolumne		1	1
Ventura		1	1
Yolo	3	2	5
Yuba	1	1	2
Totals	486	671	1,157

TABLE NO. 9.

Number of Boys in School June 30, 1924, from Broken Homes.

	Number	Per cent
Divorced	59	10.7
Both dead	44	8
Father dead	103	18
Mother dead	92	17
Totals	248	53.7

TABLE NO. 10.

Religious Affiliations of Boys in School June 30, 1924.

	Number	Per cent
Protestant	252	46
Catholic	210	38
Jewish	8	2
None	80	14
Totals	550	100

TABLE NO. 11.

Race Distribution of Boys in School June 30, 1924.

	Number	Per cent
White	398	72
Negro	42	8
Mexican-Indian	107	19.5
Oriental	3	.5
Totals	550	100

TABLE NO. 12.

Boys of Foreign Birth, and Boys of Foreign Parentage in School June 30, 1924.

	Number	Per cent
Foreign born	67	10
Both parents foreign born	71	14
Father foreign born	8	1
Mother foreign born	16	3
Totals	162	28

TABLE NO. 13.

Boys in Preston School of Industry with Military Records June 30, 1924.

	Number	Per cent
Honorable discharge	72	13
Dishonorable discharge	21	3
Totals	93	16

TABLE NO. 14.

Causes of Commitments of Boys in School June 30, 1924.

	Number	Per cent
Stealing	3	.5
Truancy	11	2
Incorrigibility	7	1 3
Burglary	172	31 3
Larceny	214	39
Sex immorality	22	4
Forgery	31	5 6
Vagrancy	4	7
Manslaughter	0	0
Assault	3	.5
Arson	0	0
Drunkenness	0	0
Highway	40	7 3
Murder	3	.5
Dependency	0	0
Miscellaneous	40	7 3
Totals	550	100

REPORT OF SUPERINTENDENT OF THE WHITTIER STATE SCHOOL.

WHITTIER, CALIFORNIA.

During the biennium just closed a number of new buildings were erected and occupied at Whittier. Two attractive and well equipped cottages made possible home life for eighty more boys. The completion of the school unit by the addition of the assembly hall has been a great improvement. These new buildings have increased the efficiency of the school; tended to relieve the strain under which employees have been working and have added to the comfort and well being of many boys. The release of the gymnasium building from use for assembly purposes will enable the school to promote physical education and provide athletic contests during the long winter evenings.

The morale of the school continues high. For three years no boy has been absent without leave and unreturned. The number of those who absent themselves without permission has steadily decreased. The boys who have been longest in Whittier take a strong stand against any running away.

The placement department reports the number of boys conducting themselves in a manner that is satisfactory to the communities in which they live as over seventy per cent of the total number on placement. Boys who have been placed out from the school, or returned to their homes, after their period of training at Whittier, have been supervised as well as could be expected under the conditions that existed.

During the past two years the boys have constructed a million and a half gallon earth reservoir that will hold surplus water from the Rincon ditch that supplies very cheap water for most of the school orchards. Arrangements are practically completed for the installation of a booster pump to force this water to the upper reservoir so that it can be made use of on the entire farm.

The citrus orchards were quite seriously damaged by frost two years ago. This reduced the farm income but the cash returns for the two years over and above all fruits, nuts, vegetables and dairy products used by the school was $25,000. Seven acres of persimmons, three acres of walnuts, two acres of apples and approximately 600 orange trees were planted during the two years, giving a total of 100 acres in orchards.

At considerable expense and inconvenience, the hoof and mouth disease was kept out of the school herd. Over 100 gallons of milk has been produced daily. All of the butter for the school is made on the premises and all of the milk is used by the school.

The school was privileged to spend part of the summer season at Catalina Island. Mr. William Wrigley, Jr., and his associates in the Wilmington Transportation Company provided free transportation and camp site. Mrs. Wrigley in many ways evidenced her personal interest and added greatly to the pleasure of the boys during the camping season. Mr. John Patrick, president of the company, Mr. David Fleming, secretary, and Mr. D. M. Renton, manager of Catalina Island, extended numerous courtesies to the school.

The state school now has one of the leading juvenile bands in the west. The various service clubs, women's clubs and all the civic organizations in the city of Whittier joined in a benefit to raise money for the purchase of band instruments.

That the Whittier State School boy is a problem in education is now rather generally conceded. Local authorities who have tried to deal with him appear to better understand and more fully appreciate than heretofore the value to the community of the state's effort at Whittier to render an effective service in the care and training of this boy. There has been a sincere and general spirit of cooperation between the school and the community representatives.

The experience of the past two years strengthens the conviction that it is essential to deal with each of these boys separately and as a special, individual problem.

Findings of the Research Bureau and of the psychologists, who have made mental tests of all boys coming to Whittier, indicate that whereas a few years ago practically one-third of the boys in the state school were definitely feeble-minded, today conditions at Whittier almost approximate those in the public school. Seventy-five per cent of Whittier boys now are classified in the low-normal, normal, or superior intelligence groups and very few of the remainder fall below borderline classification.

A comparison between conditions as they existed twelve years ago and July, 1924, is indicated by the following, showing the intelligence grouping of all boys in Whittier in 1912 and 1924:

Year	*Superior*	*Normal*	*Borderline*	*Feeble-minded*
1912	2%	38%	25%	35%
1924	5%	75%	15%	5%

Whittier was never intended to be a home for the feeble-minded. These unfortunate boys can be better cared for and at less expense to the state elsewhere, and their presence at Whittier interfered seriously with the progress and response of boys mentally capable of profiting by the academic instruction and trades training there provided.

The hearty cooperation of judges, probation officers and social workers in establishing the foregoing as a policy, contributed greatly toward bringing about the improved conditions mentioned above. Some boys were transferred to the Sonoma State Home for the Feeble-Minded.

The modification of the Juvenile Court Act and the revision of the Whittier Act, relating to acceptance of boys, as granted by the legislature at the request of Whittier, has been made use of in a number of cases. These changes make it possible for a boy who is a ward of the court to go to Whittier on probation without court commitment and for problem boys in the public schools to be received at Whittier without their becoming court wards at all. Increasing numbers of requests are constantly being received from probation officers, school principals, social welfare organizations and parents for the acceptance of such special cases. There is every indication of an increased recognition of the need for "twenty-four-hour schools" maintained by cities and counties for the problem boys of the various communities.

Whittier has a veteran Boy Scout troop and is credited with being the first state school to adopt scouting and enroll a troop in the International organization. Four members of the Whittier troop expect

to qualify as Eagle Scouts before they leave the school. All these boys began as tenderfeet at Whittier.

Much of the work of the Research Bureau was for a time held in abeyance, but Dr. Grace M. Fernald and Dr. Ellen B. Sullivan of the Department of Psychology of the University of California at Los Angeles very generously gave their services without expense to the state, and under their direction not only has the routine mental testing of all boys been continued, but some special research studies of national interest have been conducted.

Dr. Lewis M. Terman of Stanford University, with his usual thoughtfulness for Whittier State School, authorized Dr. Maud Merrill, assistant professor in his department, to edit the Journal of Delinquency, one issue appearing as the "Stanford Number."

Dr. Thomas J. Orbison, neuro-psychiatrist of Los Angeles; Dr. C. Edgerton Carter, Pasadena physician; Dr. E. V. Emery of the staff of Norwalk State Hospital, have made examinations of special cases and rendered valuable service free of charge. A number of boys who received Dr. Carter's thyro-logen treatment showed marked improvement in physical condition and mental alertness.

The general health conditions supervised by Dr. Herbert E. Tebbetts, continue to be excellent.

Governor Richardson personally authorized the Department of Finance and the Department of Institutions to draw on the general emergency fund for the use of Whittier during the second year of the biennium. This action by Governor Richardson meant the addition to the staff of a woman to act as mother to a group of small boys; a teacher for the Department of Education; a director of physical education and athletics; some much needed assistance in the after-care of boys trying to reestablish themselves following their period of training at Whittier, and restoration of better working conditions throughout the school. It also made it possible to secure the services of Dr. Catharine Cox of Stanford University as director of the consolidated departments of Research and Education. Dr. Cox will also take over the editorship of the Journal of Delinquency, which will continue to be published by the Whittier School press.

During the past two years there has been a steady increase in the number of requests from juvenile courts to have boys received at Whittier. The school is always over-full. Commitments exceed the possibility of acceptance. There is also a decided increase in the number of requests for acceptance without court commitment or court action. These come from juvenile court authorities, leading social and educational agencies, and from individuals prominent in social service. The biennial period ends with the school filled to capacity and boys under commitment waiting their turn for admission.

Practical recognition of the value of preventive work is much more evident than formerly, as is also a larger sense of responsibility on the part of society for the right of the boy to his fair chance in life. Society feels less inclined to make him carry all the burden for unhappy developments resulting from his having been neglected or to causes beyond his control.

Unfortunate home conditions still seem to be an outstanding cause of juvenile delinquency. Many problem boys apparently come from homes where there is parental incapacity rather than indifference; boys whose

parents have made a sincere effort to properly care for and train them, but who lack the necessary ability. In other instances special educational needs have not been provided for them in public school. Certain exceptional boys can not respond to any ordinary procedure however well suited it may be to the need of the average boy. Truancy and delinquencey not infrequently follow a requirement to do the impossible in school.

In many cases the boy's difficulty has been inability to learn by ordinary methods because of some actual mental peculiarity. Such a boy is sent to Whittier after he has already become a school failure. In most of these cases it is possible to bring the boy up to his grade in a fairly short period by the use of special methods.

Of the last seventy-eight cases tested thirty-one, or thirty-nine per cent, were retarded four or more years in one or more school subjects. In one case a boy of eleven with normal mentality who was unable to read his own name or to write the simplest words correctly, in spite of steady public school attendance, is being taught by methods as devised by Dr. Grace M. Fernald, to apply to nonreaders. In less than four months he is able to read in the third reader and to write as well as the average fourth grade child. At his present rate of learning he should be able to go into the fifth or sixth grade by the end of this year. The case is the more interesting as he is being taught by one of the older Whittier boys to whom the method of instruction has been explained. This case is extreme but typical of a group that is primarily an educational problem.

The first task of Whittier is to discover the particular needs and pecularities of the boy and find the methods which will bring him back to normal educational and social adjustments. But recognition of the presence of unusual mental conditions and other exceptional characteristics in problem boys has not lessened the insistence at Whittier that boys who come to the state school shall conform to certain accepted and possible standards of conduct and guard the rights of others to "life, liberty and the pursuit of happiness." Whittier has insisted on a revival of interest in prompt obedience to properly constituted authority, respect for law and reverence for things sacred.

Most boys reach Whittier without a normal interest in any definite career. The school teaches a dozen different trades. Not infrequently trades instruction opens up a new world to an indifferent boy. He becomes interested and ambitious; acquires habits of industry; and thinks in terms of future accomplishment in "my trade." Scores of boys have gone out as apprentice painters, carpenters, printers, bakers, etc., into employment at more than a living wage. Necessary expenses could be met from the income they earned and boys who pilfered to satisfy their wants have been transformed into wage earners, helping to support their parents or younger children in the family. Not a few boys have remained at Whittier of their own accord from three months to a year beyond the usual time so as to better fit themselves to follow the trade they have been learning in the school.

While the state has evidently striven to keep pace with the marked increase in the population by adding to the number and capacity of hospitals for the insane and homes for the feeble-minded, there has been no addition to the number of institutions for the care of boys in

over thirty years; nor has the capacity of those created at that time been added to in any material way. Additional provision is urgently needed now, but it is the conviction of the administration at Whittier, however, that the problem of juvenile delinquency will not be solved by merely adding to the number of state-maintained schools for court cases. On the contrary, it is believed that communities will have to deal with delinquency nearer its source by establishing twenty-four-hour schools under educational supervision and direction, locally supported.

The necessity for securing men and women of exceptional ability and special training for the work at Whittier State School was never more apparent than now. Dr. Bernard Glueck, director, Bureau of Children's Guidance, New York, recently said: "If I were called upon to indicate the most outstanding need in the field of education, I would unhesitatingly say that it was a more sensible conception of the criteria upon which the selection of the teacher should be based, and a more dependable technique for the carrying out of this selective process."

It is the opinion of Whittier that no better opportunity is presented to individuals of means for the advantageous use of large sums of money than by creating a substantial endowment for the carrying on of scientific research into all child problems in this state-maintained laboratory at Whittier.. This could also provide for training of specially selected teachers and social workers who would return to local communities trained and qualified to meet the needs of special problem children, and thus materially assist in preventing delinquency.

Fred C. Nelles,
Superintendent.

STATISTICAL TABLES.

Whittier State School, Biennial Period July 1, 1922, to June 30, 1923, and July 1, 1923, to June 30, 1924.

Table number

1. Pupils Received by Commitment, 1891–1924.
2. Statement of Actual Population in Institution.
3. Statement of Placements.
4. Statement of Approved Absences With Leave.
5. Statement of Absences Without Leave.
6. Ages at Commitment, Admitted July 1, 1891, to June 30, 1924.
7. Race Distribution of Boys Admitted July 1, 1891, to June 30, 1924.
8. Religious Affiliations of Boys Admitted July 1, 1912, to June 30, 1924.

TABLE No. 1.

Pupils Received by Commitment, Probation and Voluntary Admission, 1891-1924.

Year		*Boys*	*Girls*	*Total*	*Biennium*
1891–92		253	58	311	311
1892–93		202	39	241	
1893–94		180	33	213	454
1894–95		128	24	152	
1895–96		125	27	152	304
1896–97		60	28	88	
1897–98		61	18	79	167
1898–99		94	21	115	
1899–00		76	14	90	205
1900–01		55	13	68	
1901–02		65	19	84	152
1902–03		81	23	104	
1903–04		125	19	144	248
1904–05		98	12	110	
1905–06		96	16	112	222
1906–07		85	21	106	
1907–08		87	36	123	229
1908–09		91	39	130	
1909–10		96	46	142	272
1910–11		100	40	140	
1911–12		105	39	144	284
1912–13		85	46	131	
1913–14		44	2*	46	177
1914–15		81	--	81	
1915–16		98	--	98	179
1916–17		96	--	96	
1917–18		167	--	167	263
1918–19		167	--	167	
1919–20		126	--	126	293
1920–21		168	--	168	
1921–22		147	--	147	315
1922–23	By commitment	150			
	On probation	26	--	176	
1923–24	By commitment	186			
	On probation	8	--	194	370
Totals		3,812	633	4,445	4,445
Received by voluntary admission—					
1922–23		7	--	7	
1923–24		5	--	5	12

* By act of legislature June 14, 1913, the Girls' Department of Whittier State School ceased to exist, and became the California School for Girls, now located at Ventura.

TABLE No. 2.

Statement of Actual Population in Institution.

Received during the year—	*June 30, 1922*	*June 30, 1923*
In institution at midnight	305	316
By new commitment	174	186
By return from placement	47	30
By return from approved absence	0	3
By return from absence without leave	24	23
By transfers	2	8
By voluntary admission	7	5
Total received	254	255
In institution during the year	559	571
Passed out during the year—		
By discharge—By order of the court	29	47
By discharge—By order of superintendent	13	22
By expiration of sentence, term or commitment	0	1
By placement	156	126
By approved absence	5	11
By absent without leave:		
A. W. O. L. more than one day	5	10
A. W. O. L. returned same day and returned voluntarily	17	14
By transfer	11	31
By death	3	0
By release from remaining voluntarily	4	7
Total passed out	243	269
Total population at end of year	316	302

TABLE No. 3.

Statement of Placements.

	June 30, 1922	*June 30, 1923*
On placement at midnight	157	182
Transferred from approved absence to placement	5	2
Placement during the year	156	126
Totals	318	310
Discharged from placement, order of superintendent	78	104
Term expired on placement	10	4
Returned from placement	46	30
Died on placement	0	0
Removed from placement	2	0
Totals	136	138
On placement at end of year	182	172

TABLE No. 4.

Statement of Approved Absence.

	June 30, 1922	*June 30, 1923*
On approved absence at midnight	11	8
Approved absence during the year	5	12
Totals	16	20
Discharged from approved absence—		
By order of superintendent	1	3
By order of court	1	2
Returned from approved absence	1	3
Transferred from approved absence to placement	5	2
Died on approved absence	0	0
Removed from approved absence	0	0
Term expired while on approved absence	0	1
Totals	8	11
On approved absence at end of year	8	9

TABLE No. 5.

Statement of Pupils Absent Without Leave.

	June 30, 1922	*June 30, 1923*
Absent without leave at midnight	12	9
Absent without leave during year—		
A. W. O. L. more than one day	5	10
A. W. O. L. returned same day and returned voluntarily	17	14
Totals	34	33
Returned from absence without leave	24	24
Term expired	0	3
Discharged while absent without leave—		
By commitment to other institution	1	1
By order of court	0	1
Totals	25	29
Total A. W. O. L. at end of year	9	4

The total of four boys absent without leave June 30, 1924, includes all outstanding cases during the school's history and is the smallest number on record.

TABLE No. 6.

Ages at Commitment, July 1, 1891, to June 30, 1924.

Age of commitment	*1923–1924*	*1891–1922*	*Per cent*	*1891–1924*	*Per cent*
Seven	--	2	.005	2	.005
Eight	5	22	.639	27	.709
Nine	6	47	1.360	53	1.390
Ten	20	97	2.811	117	3.069
Eleven	19	156	4.530	175	4.590
Twelve	30	317	9.180	347	9.220
Thirteen	57	435	12.738	492	12.906
Fourteen	100	645	18.739	745	19.543
Fifteen	108	760	22.084	868	22.770
Sixteen	24	474	13.776	498	13.006
Seventeen	1	385	11.165	386	10.125
Eighteen	0	62	1.812	62	1.626
Nineteen	0	29	.842	29	.760
Twenty	0	11	.319	11	.281
Totals	370	3,442	100.000	3,812	100.000

TABLE No. 7.

Race Distribution of Boys Admitted July 1, 1891, to June 30, 1924.

Race	*1923–1924*	*1891–1922*	*Per cent*	*1891–1924*	*Per cent*
White	312	3,056	88.786	3,368	88.370
Negro	28	259	7.524	287	7.522
Mexican-Indian	27	118	3.429	145	3.797
Yellow	3	9	.261	12	.311
Totals	370	3,442	100.000	3,812	100.000

TABLE No. 8.

Religious Affiliations of Boys Admitted July 1, 1912, to June 30, 1924.

Religion	*1923–1924*	*1912–1922*	*Per cent*	*1912–1924*	*Per cent*
Catholic	113	388	32.993	501	32.406
Jewish	3	23	1.956	26	1.682
Protestant	195	623	52.976	818	52.911
Not stated	59	142	12.075	201	13.001
Totals	370	1,176	100.000	1,546	100.000

REPORT OF DR. LEONARD STOCKING, MEDICAL SUPERINTENDENT OF AGNEWS STATE HOSPITAL, ON RESEARCH AND ITS APPLICATION IN THE AGNEWS STATE HOSPITAL.

Mr. Walter D. Wagner,
Director of Institutions,
Sacramento, California.

In compliance with your request, I herewith submit my report on Research and its Application in the Agnews State Hospital.

This hospital has stood for all that is best in construction, equipment and methods; and results justify all expenditure and effort. Its physical plant is not surpassed. It has been independent and progressive in its methods. It has discarded many old and generally accepted ways, and adopted new, and some quite radical ones. We have ventured into the field of experiment and research enough to know there are great possibilities yet untried in psychiatry, both in determining causative factors, and methods to be utilized to restore.

For organic troubles we must look to the physical laboratory for solution; for functional, without any apparent pathological physical change, to the psychological. For the pathological physical causes, be they germinal or chemical, we must seek physical remedy. When we can find no such causes, it is useless to resort to mere empirical physical and medical remedies. When the condition is psychic, as far as we can determine by manifestations, then the remedy must be sought by such methods as will reach these psychic changes and again coordinate thought and action and restore the individual personality to its normal plane.

Along these two lines we have been moving, but too slowly. We are now going to push forward in investigation, research and experimentation, putting into practice any newly acquired knowledge, and also our present conceptions of the possible.

No chemical analysis that opens up new possibilities of the discovery of toxins, no revealing of cellular change, no effort to free the tissues from microorganisms should be overlooked, knowing, as modern science does, the importance of their consideration, especially in the more destructive and deteriorating diseases.

Along this line, we now have to our credit the most reliable known test of abnormality of spinal fluid, a mastic perfected by Dr. Cutting of our staff, now in general use throughout the world, and quoted in all recent text books as Cutting's method.

We can not go too far along the line of research with microtome and microscope, applying exact clinical methods to investigation of nerve centers. Our pathologist, Dr. Proescher, has been making, and is still engaged in some heretofore untried methods of research to determine the morphologic and biologic character of the spirochætes found in the central nervous system of paretics. His investigations promise some interesting results. His experiments must, however, be many times repeated, and on a larger scale before definite conclusions can be reached. Also, seeking an explanation for the unsatisfactory results obtained in paresis with salvarsan, he has started some experiments in relation to the distribution of arsenic in the spinal fluid.

As we are frequently asked by wives of paretics if they might not have become infected because of their relation to neuro-syphilitics, Dr. Mullen examined the blood of seventy-six such wives, whose marriage occurred after all evidence of infection of the husband had disappeared, to determine if it might be possible for infection to occur through fetal circulation; with the result that in no case of this number was evidence of infection found.

There is no more important chemical work than that in relation to the discovery of toxins. On the assumed premise that a toxicosis of unknown character and origin (possibly alimentary or endocrine, as some think) exists in dementia præcox, we are engaged in a series of experiments and tests, chemical and otherwise, of the blood of dementia præcox patients. Of course a great amount of work has to be done with a large number of cases to verify any findings.

But with all the scientific mechanism, which we should have to continue the study of modern biology, we must keep in mind the tendency to become too materialistic; so inclined is the pathologist to attribute mental disturbance entirely to organic lesions. Microbes have played the leading role as the cause of all disease. Now internal secretions hold the center of the stage!

There is no doubt but inquiry and experiment towards a better understanding of the endocrine system is opening up a new field of enlightenment and treatment. Its basic ideas and main results bridge the gulf between positive and practical information of science and the psychology of emotions and thought, and their direct effect on the body, whereas the glands in their relation to personality, form the other end of the bridge. Recognizing the possible lack of proper functioning of glands of internal secretion, we have done considerable experimenting in a variety of cases with gland treatment. Also we are making some studies in the relation of epilepsy to certain endocrine glands.

However, psychopathic and neurotic maladies are not dependent alone on the action of any one organ or function, but on a condition more or less common to all. In fact, physical disorders are often not associated with any discoverable physical lesion. When the brain is affected only in function, without some discoverable physical lesion, such as hyperemia or anemia, inflammation, hemorrhage, or tumor, the problem has been dismissed as incomprehensible.

No doubt the psychoanalytical movement has been of great value in stimulating experimental work along this line; still it has overreached itself in its claim as a panacea for all mental ills to such a degree that many of the broadest minded psychologists now repudiate it, even to the extent of asserting "Freudian psychoanalysis should be openly declared a fraud," inasmuch as it has become "a sort of astrology full of superstitions, symbolizations, dream vagaries with arbitrary interpretations, based on sex perversions."

Although we owe a debt to Freud and his followers for developing a new and definite analytical science for obtaining a deeper knowledge of the subconscious, his deductions are neither all-comprehensive nor final, and the time is ready for a deepening and widening of the meaning of the term beyond the limitations of any one method, on the broader basis of the sum total of all metaphysical insight obtained by definite scientific means. Not only dreams, symbols and word associations should be made the foundation of investigation, but everyday actions,

physical characteristics, life, heredity, environment, tendencies, associations, the likely course of impulses, etc.

Dr. Hawley, also of our staff, has been engaged in extensive comparison of personalities in different forms of mental reaction to determine tendencies which may be checked before they result disastrously.

All psychology as practiced today is largely experimental, but only by profound and patient inquiry in such institutions offering the widest opportunity, can it be raised to an accurate science, which is the ideal goal. Much of this must be done on the basis of the determination of the relation between the psychical and the physical.

The late Dr. Whisman of the Agnews staff, made anatomical, physical and endocrine measurements of a large number of dementia præcox in comparison with an equal number of normal individuals.

Precise and reliable evidence brings before us the constant parallelism correlating scientific principles in various branches of knowledge. We have done some work and deduced some conclusions in regard to reaction of pupils to different colored lights, enabling us to speak of different degrees of reaction in terms of color.

No analysis should be removed from the sphere of daily activity, or separated from the ultimate aim of establishing a new system of reactions and coordination in feeling, thought and action. A mental suppression, a tendency or obsession should be discovered only to be corrected, and no method which reaches only as far as investigation (which has been too much the limited aim of the psychoanalyist of the past) and not to the goal of readjustment, is worthy of the name of mental science.

It is far easier in physical life to reproduce necessary equilibrium than in psychical, when, instead of cells, we are dealing with obsessions, delusions, hallucinations, multiple personalities, and addictions. Through studies by Dr. Hawley of narcotic addicts with reference to physical and mental make-up, emotional characteristics and morbid inclinations, also heredity, the conclusion has been reached that they are constitutional defectives, unless, perchance the habit is acquired accidentally. If this be true, it calls for one of the most important applications of psycho-dynamics, in combination of course, with proper physical attention, aiming at awakening a corrective consciousness within.

Certain studies in hallucinations, the examination of the heart by X-ray of dementia præcox, as to its variation from normal, as claimed by some, are other investigations now being carried on. Our present problem, while carrying on our work with as advanced methods as possible, is to clarify theoretical suppositions which may be then used to build a foundation on which a broader system of mental science and treatment can be based. Even our present classification, dementia præcox, manic depressive, etc., though a great advance over previous methods, is not scientific, satisfactory, nor fair. Some of the terms used are too broad, and still leave one in doubt as to the real character of the departure from normal. I would prefer more descriptive terms, such as depressions, elations, suppressions, repressions, disassociations, split, or multiple personalities, etc.

From such scientific analysis of the personality of each patient must proceed the guidance of his life. Here is the real field of the alienist. Physical and mental reeducation must go hand in hand,

equally exact and scientific. A patient's activities must become a personal study. He must not be kept just busy in a routine of work, which, though often an efficacious basis of treatment, may be misused, if it maintain him on the same plane of low mental activity as has been a part of the pathological system of his life, instead of serving as a means of lifting him to a higher type of personal consciousness. Here is clearly evident the misuse, as well as the value, of therapeutic industries. They should be really therapeutic, and not merely misapplied work.

The readjustment of mental reactions and activities into new channels, depends on the knowledge of the physician reduced to a science of precision by research and experiment in mental phenomena, and on the means at hand for treatment in environment, care, activities, etc. These should be exemplified in the very morale and daily life of such an institution by the attitude of physicians and atttendants to the mentally ill, by activities stimulating functioning on right lines, by surroundings that appeal to the higher consciousness through the senses.

Our present hospital affords these in strong contrast with the old asylum I found here, of long, dark corridors, massive doors and barred windows; from the exterior imposing but repellant; inside uncomfortable and depressing, with bare floors and walls, no curtains, no pictures, no flowers, no embellishments of any kind; meager furniture of rough heavy benches, and a few chairs of oak plank for the purpose of restraint; dining tables furnished only with tin plates and cups and pewter spoons. Add all forms of mechanical physical restraint: muffs, straps, jackets, etc., and airing and recreation only in crowded, dusty yards, enclosed by high brick walls, with guards or keepers rather than nurses and attendants, and we have a condition showing lack, at that time, of comprehension of mental disturbance, and an environment from which only disastrous results could be expected.

In contrast, our present attractive, homelike buildings, light and airy, with pleasing furnishings, are uplifting and hope-inspiring. With the old conditions have gone all forms of mechanical restraint, as well as barred windows and bolted doors, the pens supplanted by attractive parks.

The object is to make the patient conscious of new life and mental viewpoint by whatever means best serves, whether it be reeducation of will and reason—or electricity.

We seem to be only tapping such hidden powers as electricity in experiments with it in restoring hearing and silencing head noises, in changing the motion vibration of the body, in stimulating reflexes, whereby consciousness is directly reached. But it must not be forgotten that muscular movement generates electricity statically, and that controlled motion effecting coordination of mind and muscle, can not only relax tense nerves and centralize consciousness, if under expert direction, but liberate dormant reserve energy as effectively as light therapy instills it through the stimulus of sun baths, ultraviolet ray, actinic ray, etc., which should be indispensable in such an institution.

Much of the physician's direct mental treatment in all cases must be made along the line of suggestion aiming at self-control in physical, mental and moral actions. This must be preceded and accompanied by therapeutic measures to induce a condition of suggestibility and

strengthen its power. But in such disturbed cases as offer resistance to suggestion, made in the usual ways, lies one of the most fertile fields for research. It is evident that a dynamic suggestion is necessary to awaken the ego in such cases as melancholia, conflict of personalities, those under the sway of fixed delusions, hallucinations, perversions, etc. Since all abnormal mental states such as hypnosis and trance are repudiated, research into the possibility of a state of consciousness which may be utilized for the purpose of such therapeutic suggestion should result in one of the greatest contributions to psychotherapy.

In all this, doctors must learn new and progressive handling of mental material, and where can better opportunity be found than in hospitals for the insane where are seen the most severe forms of psychopathic disease? If skill and knowledge renders physicians capable in research, their influence should be great—far beyond the institution of their active field. Positive scientific and practical information as to operation of the mind is perhaps the greatest need today. Practical methods of enlightening the physician in general practice would probably prevent a large percentage of mental disease, not due to organic deterioration. These physicians look to us, with our opportunity and facilities, to furnish them with the science they can obtain in no other way, with their limited opportunity for experience and the absence of any adequate instruction in the schools in this, still experimental, science.

And what of those enigmas confronting us on all sides in youthful criminals? Penal authorities and physicians acknowledge their utter inability to solve these incomprehensible problems on any physical basis, even that of glands, though they may indeed be a very efficient connecting link. Observations gathered by psychiatrists on mental disease must be the way of greater enlightenment of the problem of criminals, as well as that of the insane, and the laboratory is the state hospital.

Knowledge of mental processes, like that of any other science, is established by research, and thoroughly tested laws. Isolation is as necessary in insanity and crime as it is in smallpox or leprosy, but it need not necessarily be a hopeless isolation, which bespeaks only our stupidity. The mere incarceration of a smallpox patient would never have given to the world a preventative vaccine.

Neither will human interest alone solve the enigma. We will continue to read of the atrocious crimes committed by criminals treated according to the most humanitarian methods of parole, etc., until we will be compelled to seek scientific methods, not to be found in mere psychology and philosophy, but by the most penetrating means of research into mental phenomena which reveals the working of the soul machine. Mental science can no more progress without this anatomy of the soul than physical science can without the anatomy of the body.

The day has come when every prison should have psychiatrists on its staff, and where are they to be prepared and trained, but in the state hospital for the insane, equipped for research, where alone the material is at hand?

It must not be lost sight of, however, that the understanding of mental states demands not only scientific training, but a free intuitive insight which makes the equipment of the true psychiatrist even rarer than the make-up necessary for the mere scientist.

We are on the threshold of discovery in the psychophysical. It would seem as though physical science, with its limitations, had become more or less static. Even its latest advance in endocrinology borders on the metaphysical. The psychophysical is of the future. We *know* nothing as yet. We meet incomprehensibilities at every turn. What more inspiring to endeavor and expenditure?

Respectfully submitted.

LEONARD STOCKING,
Medical Superintendent.

November, 1924.

REPORT OF MEDICAL SUPERINTENDENT, MENDOCINO STATE HOSPITAL.

TALMAGE, CALIFORNIA.

RECONSTRUCTION.

Recommendations as suggested in the last biennial report have been completed as follows:

Ranch ward replastered and painted. The original beaver board has been replaced by metal lath and plaster throughout and same painted in suitable light colors.

Assembly hall replastered, painted, stage removed, and hardwood floor added. Moving picture machine moved outside assembly hall in fireproof addition.

Wards 4, 5, 6 and A, B, C replastered on metal lath, new concrete floors where needed (water sections and pantries), maple flooring on halls, and linoleum in dormitories, also painted in light color. This work has placed the nine wards, six male and three female, situated in main building, in a satisfactory sanitary condition. They are now light and comfortable and easily cared for.

The construction of the new paint shop, repair of ranch foreman's cottage, and removal of the carpenter shop has not been begun, as the other work was considered more important.

A shelter garage housing twelve automobiles has been constructed.

Additional cold storage capacity for milk, vegetables, and other supplies, with additional compressor has been installed.

Several rooms in basement have been completed for employees by institutional labor.

The remodeling of kitchen is completed.

The Imhoff tank is completed and in operation, giving satisfactory results.

The irrigation system is two-thirds completed and has materially increased the production of the ranch. It has been so constructed that water for irrigation purposes is available from either pumps or reservoir system.

The metal pipe line from the reservoir to service tank and from ranch wells to service tank, replacing the wood stave line is completed, which with a new pump of greater capacity, permits the use of well water for domestic purposes, entirely eliminating danger of possible contamination of drinking water, and in addition providing better water for boiler and laundry use. The reservoir water will hereafter be used only for irrigation purposes and fire protection.

CONSTRUCTION.

The receiving building begun during the spring of 1924 is well under way and progressing satisfactorily. This building will have a capacity of sixty patients, thirty males and thirty females, each housed in separate wings.

A separate kitchen has been added for the preparation of food in this building alone.

It will furthermore contain a hydro department, surgery, clinical laboratory, dental surgery, clinical conference room, drug room, and examination rooms.

The third floor center will be equipped for the medical and surgical care of sick employees.

This building will be modern in every respect and should aid materially in the care and treatement of acute mental admissions.

GENERAL TOPICS.

Nineteen hundred fruit trees; apple, pear, and prune, were planted in February, 1923, and the loss to date has been less than 1 per cent. Additional acreage of blackberries and red raspberries has been planted, and stock purchased for planting strawberries, currants and gooseberries during the spring of 1925.

The vegetable gardens have been moved to the ranch and this transfer has been justified by an increased quantity and better quality of products. More ground at the ranch will be given over to this department as need demands. The change in the situation of the vegetable gardens has resulted in increased quantity and variety of vegetables extending over a longer period for patient consumption. It will also be possible to can a greater variety of vegetables for winter use, as the practicability of this method has been demonstrated. When the new orchard comes into bearing it will be possible to issue fresh and dried fruits in sufficient quantity. The lack of fresh fruit and berries has been noticeable in the past. In general, the food balance and preparation has been improved during the past biennium. We have demonstrated the possibility of satisfactorily growing potatoes and beans in quantity sufficient to warrant the use of additional land for this purpose.

All U. S. Veterans' Bureau patients were removed to the U. S. Veterans' Hospital No. 24, Palo Alto, California, in March and June, 1923. Such veterans as are now in the hospital have been admitted on regular commitment and have been held not subject to hospitalization by the U. S. Veterans' Bureau under their own ruling.

The reconstruction of wards has materially increased the comfort of patients, as is shown by individual comment.

The use of moneys derived from interest on patients' trust fund, made possible by the last legislature, has permitted the purchase of a high grade reproducing piano for the amusement auditorium, together with a new piano, phonograph and records for ward use, thus affording amusement for the greatest number of inmates. The addition of new recreation grounds mentioned under "Future Development" will materially add to the comfort and amusement of patients.

By the frequent checking of the condition of patients by physicians and the discharge or parole of such as are in condition to live outside of the institution, it has been possible to keep down the population of the hospital. Since the transfer of the last veteran cases to Palo Alto in June, 1923, and excluding seventy-five patients received from the Southern California State Hospital in the emergency, the population during the past year has increased only four.

PERSONNEL.

September 1, 1923, Dr. Alice S. Cutler resigned.
May 14, 1924, Dr. Rosalie McAdams appointed to fill the position.
August 1, 1923, Dr. F. A. Irmen resigned.
November 18, 1923, Dr. F. F. DuPree appointed to fill the position.
May 31, 1924, Dr. F. F. DuPree resigned.
December 31, 1923, J. F. Trivett resigned as acting business manager.
January 1, 1924, F. E. Mason appointed to fill the position.
June 30, 1924, E. C. Caffrey resigned as chief engineer.
July 1, 1924, Fred Getchell appointed to fill the position.

FUTURE DEVELOPMENT.

A building program should be instituted, sufficient to care for the increase in population and provide for relief from over-crowding, both of which conditions exist throughout the state. The situation and contour of the grounds at this hospital lends itself admirably to expansion. With moderate addition to our present agricultural land, an ultimate population of 2500 can be cared for. We have demonstrated that a sufficient water supply can be developed to care for the above number of patients.

Additional quarters for employees are necessary, as many employees are forced to live off the grounds under present conditions.

Quarters for nightwatches should be built in the proper situation where they will not be disturbed by various activities about the institution.

The present boiler house is situated on ground above the elevation of the other buildings, necessitating pumping all returns, which is expensive. The present boiler capacity is inadequate and will be more so with the addition of the receiving building now under construction and future buildings. In view of the above conditions, a suitable site for the heating plant has been selected and new buildings with additional boiler capacity are requested. It is further suggested that, in order to make a unit of industries, the laundry, gas plant, mechanical department and cannery be moved to the proposed site of new heating plant. The removal of these industries, together with building of new paint shop and removal of present carpenter shop to newly-selected sites, will make it possible to use the ground now occupied by these industries as recreation areas for both male and female patients.

The further remodeling of halls and basement of the main building including the two wings, with the principal idea of fire protection and sanitation, should be cared for during this biennium.

The following tables show farm, garden, and dairy products and articles made in the sewing room during the biennium:

Showing Quantity of Products of Farm, Garden, Dairy, Etc.

For seventy-fourth fiscal year, ending June 30, 1923.

Product	*Quantity*	
Apples, fresh	pounds,	3,880
Beans, string	pounds,	9,800
Beef	pounds,	3,167
Beets	pounds,	14,535
Berries, black	pounds,	440
Cabbage	pounds,	88,609
Carrots	pounds,	34,160
Cauliflower	pounds,	9,899
Celery, 480 dozen	pounds,	975
Corn on cob, 967 dozen	pounds,	9,670
Cucumbers	pounds,	14,180
Ducks	pounds,	126
Eggs, fresh	dozen,	27,158
Chickens	pounds,	3,760
Egg plant	pounds,	550
Grapes	pounds,	15,990
Hay—Alfalfa, baled	pounds,	272,700
Alfalfa, loose	pounds,	19,870
Alfalfa, green	pounds,	205,935
Sold	pounds,	45,565
Grain, baled	pounds,	152,950
Grain, loose	pounds,	17,460
Oat, green	pounds,	24,130
Grains—Corn, green	pounds,	261,400
Barley	pounds,	10,022
Wheat	pounds,	51,720
Wheat screenings	pounds	1,350
Green feeds—		
Cattle beets	pounds,	317,720
Cattle carrots	pounds,	25,200
Lettuce	pounds,	9,520
Melons—Musk	pounds,	2,718
Water	pounds,	415
Milk, whole	gallons,	51,250
Onions, green	pounds,	41,700
Parsnips	pounds,	14,960
Peaches, fresh	pounds,	405
Pears, fresh	pounds,	21,355
Peas	pounds,	4,303
Peppers	pounds,	3,266
Pork	pounds,	28,332
Prunes, fresh	pounds,	25,631
Pumpkins	pounds,	10,260
Radishes, 2,160 dozen	pounds,	720
Rhubarb	pounds,	660
Rutabagas	pounds,	17,460
Straw, sold	pounds,	5,950
Squash	pounds,	11,070
Tomatoes, fresh	pounds,	7,650
Turkeys	pounds,	1,630
Turnips	pounds,	54,345
Veal	pounds,	861
Wood, oak	cords,	35

For the seventy-fifth fiscal year, ending June 30, 1924.

Product		*Quantity*
Apples, fresh	pounds,	420
Bacon	pounds,	1,788
Beans, string	pounds,	9,336
Beef	pounds,	1,320
Beets	pounds,	29,750
Berries, assorted	pounds,	527
Cabbage	pounds,	168,100
Carrots	pounds,	63,360
Cauliflower	pounds,	28,440
Celery	dozen,	1,075
Chickens	pounds,	3,651.5
Corn on the cob	dozen,	1,823
Cucumbers	dozen,	9,800
Ducks	pounds,	16
Eggs, fresh	dozen,	30,495
Egg plant	pounds,	15,500
Grapes	pounds,	10,150
Greens	pounds,	1,901
Grains—Barley	pounds,	47,020
Oats	pounds,	4,480
Wheat	pounds,	58,950
Green feeds	tons,	321.64
Ham	pounds,	3,380
Hay—Alfalfa, baled	pounds,	224,310
Alfalfa, loose	pounds,	171,420
Grain, baled	pounds,	187,840
Grain, loose	pounds,	185,340
Lettuce	pounds,	1,040
Melons—Musk	pounds,	20,712
Water	pounds,	24,571
Milk, whole	gallons,	45,024.8
Onions—Dry	pounds,	22,680
Green	pounds,	35,550
Parsnips	pounds,	18,180
Peaches, fresh	pounds,	551
Pears, fresh	pounds,	6,250
Peas	pounds,	1,370
Peppers	pounds,	2,075
Potatoes, Irish	pounds,	530
Pork	pounds,	16,857
Prunes, fresh	pounds,	5,468
Pumpkins	pounds,	5,676
Radishes	pounds,	5,480
Rhubarb	pounds,	1,390
Root crops	tons,	239.553
Rutabagas	pounds,	7,730
Silage	tons,	150
Spinach	pounds,	1,540
Squash—Hubbard	pounds,	4,950
Summer	pounds,	6,120
Straw	pounds,	93,380
Tomatoes—Fresh	pounds,	5,960
No. 10 cans	pounds,	7,740
Turkeys	pounds,	69.5
Turnips	pounds,	4,940
Veal	pounds,	518
Wood, oak	cords,	145

Articles Made in the Sewing Room During the Seventy-fourth Fiscal Year, Ending June 30, 1923.

Articles		*Material*	
195	aprons	295¾	yards cheviot
24	aprons	58	yards gingham
19	aprons	31⅝	yards Indian head, bleached
110	aprons	121	yards muslin, lonsdale
27	aprons	30½	yards sateen, black
48	aprons	89⅝	yards ticking
78	aprons	105⅝	yards twill, bleached
76	aprons	120⅝	yards twill, unbleached
2	bags	8	yards 8-ounce duck
1	bag, ice	½	yard 8-ounce duck
7	bags, laundry	14⅝	yards blue denim
3	bags, laundry	6½	yards ticking
13	bags, sand	6½	yards No. 6 canvas
72	bibs	25	yards 8-ounce canvas
30	caps, cooks' and dairy	10½	yards bleached Indian head
23	capes, ladies'	47	yards navy blue flannel
		47	yards flannelette
341	chemise	831½	yards unbleached Indian head
62	coats, cooks' and waiters'	172½	yards bleached twill
19	corset covers	20⅜	yards unbleached Indian head
40	coveralls	226⅝	yards blue denim
15	curtains	40½	yards cretonne
14	curtains	33	yards muslin
170	curtains	527½	yards scrim
2	curtains	5	yards bleached sheeting
4	curtains	9	yards dotted swiss
171	drawers, ladies'	342	yards unbleached Indian head
958	drawers, men's	2,347	yards canton flannel
116	dresser and stand covers	137	yards bleached Indian head
177	dresses	913	yards cheviot
10	dresses	51½	yards cottonade
25	dresses	137⅝	yards denim
124	dresses	768½	yards galatea
199	dresses	1,095¾	yards gingham
7	dresses	40½	yards mackinaw twill
1	dress	5½	yards print
237	gowns, long	1,191½	yards unbleached Indian head
186	gowns, short	679	yards unbleached Indian head
18	mattresses		upholstering department
173	petticoats	391⅜	yards cheviot
94	petticoats	244¾	yards flannelette
98	petticoats	210½	yards canton flannel
18	pillows		floss
7	pillows		feather
26	restraint jackets	120¼	yards 10- and 12-ounce canvas
60	shams, pillow	55	yards bleached Indian head
310	sheets, employees'	859	yards 7/4 and 8/4 bleached sheeting
3,728	sheets, patients'	10,358¾	yards 6/4 and 7/4 unbleached sheeting
6	sheets, puncture	6½	yards bleached twill
105	sheets, rubber		reinforced
108	shirts, hickory	355	yards hickory
36	shirts, sport	123	yards hickory
36	shirts, night	122½	yards unbleached Indian head
255	slips, pillow, employees'	256¾	yards 5/4 bleached sheeting
400	slips, pillow, patients' colored	407¾	yards cheviot
1,052	slips, pillow, patients' white	977¾	yards 4/4 bleached muslin
48	smocks	176¼	yards lonsdale muslin
130	strings, jacket	23¾	yards ticking
13	suits, duck	72⅝	yards 8-ounce canvas
37	table cloths	125 7/12	yards damask
12	table cloths	36¾	yards unbleached Indian head
1	table cloth	3½	yards linen
24	table cloths	84	yards bleached sheeting
12	table cloths	36	yards unbleached sheeting
12	table runners	20	yards bleached Indian head
52	throws, ladies'	140¾	yards navy blue flannel
		140¼	yards flannelette lining
271	ticks, mattress		
9	ticks, pillow		

Articles		Material
1,716 towels, dish		flour and sugar sacks
1,097 towels, bath	1,487½	yards crash
651 towels, face	602¾	yards crash
446 towels, roller	1,045	yards crash
840 undershirts	2,080¾	yards canton flannel
14 wrappers, Mother Hubbard	76½	yards cheviot
Mending, alterations, etc.	269	yards various materials
Private clothing—		
34 dresses		private material
2 coveralls		private material
6 petticoats		private material
1 skirt		private material

Articles Made in the Sewing Room During the Seventy-fifth Fiscal Year, Ending June 30, 1924.

Articles		Material
106 aprons	195	yards cheviot
8 aprons	15	yards bleached Indian head
186 aprons	211	yards lonsdale muslin
36 aprons	38	yards black sateen
42 aprons	78	yards ticking
93 aprons	138⅞	yards bleached twill
33 aprons	53	yards unbleached twill
1 bag, laundry	3	yards ticking
1 bag, mending	3	yards ticking
12 bags, sand	6	yards No. 6 canvas
7 bags, stocking	14⅜	yards galatea
12 belts, abdominal	13½	yards 7/4 unbleached sheeting
6 belts, sanitary	4½	yards unbleached Indian head
6 belts, surgical	2	yards lonsdale muslin
73 bibs	30¾	yards 8-ounce canvas
	1⅝	yards 10-ounce canvas
12 caps, dairy	4½	yards bleached Indian head
60 cases, glove	14	yards 12-ounce duck
229 chemise	572½	yards unbleached Indian head
32 coats, cooks' and waiters'	85½	yards bleached twill
8 collars	2¾	yards lonsdale muslin
12 combinations	24	yards unbleached pequot
11 corset covers	13½	yards unbleached Indian head
17 coveralls	100⅛	yards denim
12 curtains	34⅞	yards cretonne
5 curtains	35	yards marquisette
67 curtains	142⅜	yards scrim
33 curtains	55	yards 6/4 sheeting
5 cushion tops	5⅞	yards cretonne
243 drawers, ladies'	435⅛	yards unbleached Indian head
1,211 drawers, men's	3,143½	yards canton flannel
73 dressers and stand covers	114½	yards bleached Indian head
86 dresses	468½	yards cheviot
42 dresses	231⅜	yards denim
38 dresses	205¾	yards devonshire
126 dresses	711¾	yards galatea
213 dresses	1,172¾	yards gingham
260 gowns, long	1,328½	yards unbleached Indian head
320 gowns, short	1,183½	yards unbleached Indian head
2 pair mitts, canvas	1½	yards 10-ounce duck
217 petticoats	496	yards cheviot
158 petticoats	301¼	yards canton flannel
2 rompers	12	yards blue denim
53 restraint jackets	44	yards 8-ounce canvas
	73⅜	yards 10-ounce canvas
	110	yards 12-ounce canvas
	41	yards No. 6 duck
185 shams, pillow	177½	yards bleached Indian head
193 sheets, employees'	524¾	yards 7/4, 8/4, 9/4, 10/4 bleached sheeting
2,746 sheets, patients'	7,656¾	yards 6/4 unbleached sheeting
132 sheets, employees'	365	yards 7/4 unbleached sheeting
59 sheets, rubber		reinforced
9 shirts, night	40	yards unbleached Indian head
352 slips, pillow, employees'	349¼	yards 5/4 bleached sheeting

Material		*Articles*	
60	slips, pillow, patients' colored	61⅞	yards cheviot
84	slips, pillow, patients' white	76	yards bleached Indian head
1,080	slips, pillow, patients' white	963	yards muslin
269	slips, pillow, patients' white	243¾	yards 4/4 bleached sheeting
1	smock	5¾	yards blue denim
15	smocks	64½	yards lonsdale muslin
120	strings, jacket	26¾	yards ticking
6	suits, duck	36	yards 8-ounce duck
2	suits, duck	13½	yards 10-ounce duck
62	table cloths	176½	yards cotton damask
10	table runners	14⅞	yards bleached Indian head
117	ticks, mattress		
73	ticks, pillow		
350	tags, blanket		
922	towels, bath	1,139½	yards crash
1,251	towels, dish		flour sacks
543	towels, hand	518	yards crash
512	towels, roller	1,342½	yards crash
1,117	undershirts, men's	2,754¾	yards canton flannel
42	wrappers, Mother Hubbard	222½	yards cheviot
	Mending, alterations, etc.	111⅝	yards various materials
	Private clothing—		
57	dresses		private material
46	petticoats		private material
11	skirts		private material

APPROPRIATION FOR SALARIES AND SUPPORT

We will require for salaries for the biennial period, July 1, 1925, to June 30, 1927, $367,970. The increase in salary appropriation asked for is owing to the increase in personnel when the receiving building is completed, which is expected to be by July 1, 1925. The increase amounts to a total of $1,230 a month.

We will require for support during the biennial period, July 1, 1925, to June 30, 1927, $355,000.

Respectfully submitted.

DONALD R. SMITH,
Medical Superintendent.

REPORT OF MEDICAL SUPERINTENDENT, NAPA STATE HOSPITAL.

IMOLA, CALIFORNIA.

HONORABLE WALTER D. WAGNER,
Director Department of Institutions,
Sacramento, California.

DEAR SIR: In compliance with the requirements of the law, the biennial report of the operation of the Napa State Hospital, for the seventy-fourth and seventy-fifth fiscal years, ending June 30, 1924, is presented herewith.

Incorporated into this report are brief statistical tables summarizing for your inspection some of the more important features of the movement of patients during the biennium.

Following these tables is a condensed statement of improvements made to our hospital plant and property.

GENERAL STATISTICS FOR THE TWO-YEAR PERIOD, JULY 1, 1922, TO JUNE 30, 1924.

	Men	*Women*	*Total*
Incoming—			
Insane—First admissions	690	361	1,051
Readmissions	149	64	213
Transfer from other institutions	9	67	76
Alcoholics	20	5	25
Drug addicts	40	22	62
Totals	908	519	1,427
Outgoing—			
Insane—Discharged—Recovered	92	67	159
Improved	210	114	324
Unimproved	95	10	105
Not insane	22	6	28
Transferred to other institutions	4	7	11
Died	348	192	540
Alcoholics—			
Discharged—Expired sentence	5	0	5
Unexpired sentence	13	4	17
Drug addicts—			
Discharged—Expired sentence	7	6	13
Unexpired sentence	31	15	46
Totals	827	421	1,248
Remaining under treatment June 30, 1924—			
Supported by state		2,223	
Pay patients		444	
Total		2,667	
Patients on leave of absence June 30, 1924	107	146	253
Increase in population—			
Seventy-fourth fiscal year, July 1, 1922, to June 30, 1923	Dec. 25	Inc. 24	Dec. 1
Seventy-fifth fiscal year, July 1, 1923, to June 30, 1924	Inc. 40	Inc. 73*	Inc. 113
Average yearly increase in population for 10-year perid, ending June 30, 1924	21	37	58

* Includes sixty (60) female patients, transferred from Southern California State Hospital, October 11, 1923.

LABORATORY REPORT.

During the year July 1, 1923, to June 30, 1924, blood Wassermann tests were made of the seven hundred and sixty-three (763) patients admitted. Of this number the following results were obtained:

Negative	618
Positive	145

The positive cases represent 19 per cent of the total admitted.

Spinal fluid examinations were made of the 145 positive blood Wassermann cases, and 40 per cent of these 145 cases were positive to the spinal fluid test.

OCCUPATIONAL THERAPY.

The following report of the articles made by the women patients in this department covers the year July 1, 1923, to June 30, 1924. We are not able to present a statement for the year preceding this, as the former supervisor of this work left no records on her departure from our service.

The number of patients employed in this needlework varies from fifteen to thirty. Frequently on afternoons of each week, coffee and cakes are served to the women patients in the classroom, as a special reward for their work.

The articles completed by the women patients are sold throughout the year, and two bazaars are held during the year to attract new patrons of our fancy needlework. Exhibits are made at the State Fair at Sacramento each year to encourage support of this work, and to establish new customers.

Department of Occupational Therapy.

Article	*Number*	*Article*	*Number*
Bedspreads	4	Baby petticoats	5
Luncheon sets	110	Baby bibs	22
Buffet sets	17	Baby caps	7
Dresser scarfs	49	Baby crib sets	4
Pillow cases, pairs	93	Dolls	10
Center pieces	6	Nightgowns	17
Table scarfs	5	Combination suits	10
Tea cloths	9	Pajamas, pairs	2
Towels	192	House dresses	12
Tea towels	12	Shopping bags	4
Hot dish mats	14	Coin purses	16
Silver cases	25	Hooked rugs	8
Card table covers	15	Braided rugs	10
Lace, yards	56	Crochet rugs	24
Tatting, yards	139	Hand woven rugs	50
Tatted yokes	6	Hat holders	46
Crochet yokes	8	Rugs given to wards	69
Pillow tops	4		
Baby dresses	40	Sales for year	$2,089 85

Proceeds from sale of this needlework are used in the purchase of phonographs and records, radio equipment and maintenance, subscriptions to monthly magazines and music for our orchestra and band.

AMUSEMENT AND RECREATION.

We have continued our weekly entertainments for the patients. This consists of a feature picture film one week, alternating with a dance

and short subject picture films the next week. Special programs are prepared and presented at Christmas time, and Fourth of July celebration. During the summer months on Saturday afternoons baseball games are held for the patients. The hospital team is made up of employees and patients, and competes with baseball teams from the city of Napa.

Radio sets have been installed, and have proved an important entertainment feature. One of these sets was installed in the Francis cottage, our workingmen's quarters, and one set at the Spencer ranch, which is rather isolated from the activities of the main hospital.

IMPROVEMENTS DURING THE BIENNIUM.

Many improvements have been accomplished in this period, and we are grateful for the efficiency gained in the operation of our plant.

Two new cottages were built for working patients at two of our ranches, the Spencer ranch and poultry ranch The cottages have been splendid additions to these properties, as the old buildings were in very badly dilapidated condition. These cottages provided modern sanitary quarters for the patients working at these ranches, and have added greatly to their comfort and contentment. These buildings were constructed by hospital labor.

A dehydrating plant was built at the Smith-Brown ranch, and has proved very satisfactory in handling the fruit crop which is increasing each year, due to new orchard planting.

A concrete sewer line was constructed to the Napa River, and connected to a new irrigating system for our field crops At the vegetable garden, a 12″ well was put down, insuring an adequate supply of water for irrigation. The new air compressor, installed for pumping from the three deep wells at the rear of the main building, has greatly increased the flow of water from these wells, and assures us of a plentiful supply of water for domestic purposes during the dry seasons.

The old fence along the county road, on the north side of the hospital property, has been replaced with a modern wire fence.

New shops have been built in a group at the rear of the main building, for the tinsmith, shoemaker and painter. These new shops provide comfortable, well-lighted quarters, being built by hospital labor, to fit the needs of the work carried on in them, and, being constructed of hollow tile, have reduced the fire hazard of the former quarters.

Our crematory has been completed and placed in operation. This provides a more sanitary method of disposing of the unclaimed remains of deceased patients, and solves the problem of setting aside additional ground for the cemetery.

At Hoisholt hall a large ventilating system has been installed, thereby eliminating the discomfort experienced during our entertainments.

The Manor house, formerly the residence of the Medical Superintendents, has been reconstructed and made into an apartment house, for officers and employees.

Our orchard area has been increased each year, and at present we have approximately 220 acres of various kinds of fruit.

Farming operations for the year ending June 30, 1924, have been conducted at a profit, as will be shown by the following table:

Statement for the Year, July 1, 1923, to June 30, 1924.

Production at the dairy amounted to	$32,005 11
Production at the swinery amounted to	9,457 01
Production at the poultry ranch	9,436 04
Production at the farm, orchard and vegetable gardens	57,970 64
Total	$108,868 80
The total expense charged against these activities for the year was	71,506 87
Leaving a net production valuation over expense	$37,361 93

We wish to acknowledge our indebtedness to the Knights of Columbus, who have provided each week candy, cakes, raisins, toothpaste, tobacco and cigarettes for our ex-service patients.

We greatly appreciate the cooperation of the Jewish committee for personal service in state institutions.

Our thanks are due you, Mr. Wagner, for your cooperation, guidance and assistance during your incumbency.

Respectfully submitted.

J. M. Scanland,
Medical Superintendent.

REPORT OF MEDICAL SUPERINTENDENT, NORWALK STATE HOSPITAL.

NORWALK, CALIFORNIA.

MR. WALTER D. WAGNER,
Director State Department of Institutions,
Sacramento, California.

DEAR SIR: I have the honor of submitting herewith, the following biennial report of the Norwalk State Hospital covering the period ending June 30, 1924.

A synopsis of the more important tables, which has been forwarded, will show that our population on June 30, 1922, was 640 patients and that our population for the biennium ending June 30, 1924, was 971 patients, an increase of 331 patients in two years' time. This is an extremely large increase for a small institution of limited capacity and we are carrying an excess of about 100 patients, nearly 40 of these sleeping on the floor. In an institution of this small capacity an excess can not be taken care of with the same ease and comfort as in the larger institutions with their greater elasticity in handling patients.

The oil situation is now permanently settled and I see no reason why we should not proceed rapidly with the original building program that was decided upon some time ago. With the rapidly increasing population of southern California and with only two institutions in the southern part of the state, undoubtedly we can look for a very big increase in the number of commitments in the next two years and as the Patton institution is not expected to go beyond a certain maximum, unquestionably this hospital will carry the big majority of all commitments made in the south.

During the past two years cottages 11 for female, and 22 for male patients were completed. At the present time there are rapidly being completed two additional cottages, one for male patients and the other for female patients, located on the twenty-acre tract which connects the main institution with the Norwalk boulevard. They are so placed as to admit the future construction of six additional cottages on this tract. There is also being completed a 160-horsepower steam boiler to care for our increase in buildings and population.

On or about May 16, 1924, the dairy herd and hogs were attacked with the foot and mouth disease and it was necessary to kill 62 head of cattle and 203 hogs. Fortunately we had approximately thirty cows in another portion of the grounds in pasture which escaped infection. This can be a nucleus to begin our next herd.

During the biennial period ending June 30, 1924, 116 patients were sterilized at this hospital, 70 males and 46 females. This we consider a large number for a small institution.

Statistics show that heredity plays a large part in causing insanity and it is my belief that every person of the proper age should be sterilized before leaving an institution of this kind. This is in the line of preventive medicine. We believe if this procedure were followed in all state hospitals for the insane that in the future it would help to decrease the number of insane patients to a large extent.

We have had some most remarkable recoveries following sterilizations both in men and women. Many cases of dementia præcox are greatly benefited as well as those of manic depressive psychoses. It is claimed that this is due to the absorption of the internal secretions and we believe it to be a fact, as has been shown in so many of our cases. Many of our patients, both men and women, who have been greatly excited, dangerous to themselves and others and who have shown no signs of improvement, have cleared up and become apparently normal following these operations and have been able to leave the institution for a long period, have proven themselves useful men and women and have had no return of their mental trouble.

In the female patients particularly we find that it assures a longer period of remission from their mental trouble. Many women during the childbearing period vibrate back and forth between an institution and their homes. They are suffering from a mental trouble and apparently become cured at the hospital, then return to their homes and become pregnant. This assures them another mental breakdown. If these women were always operated upon before returning to their homes, we find it would assure them a longer remission and in many cases it has been found they remain at home apparently recovered. This substantiates the above statement.

The law governing the sterilizations in this state is a good one and we believe that California leads at the present time in this line of work; however, enough of it is not being done and we would urge more attention to the sterilization of insane patients, thereby reducing the number of admissions to the state institutions.

I regret that I can report little in the way of laboratory, X-ray or hydrotherapy statistics because of absence of any such departments and equipment.

FUTURE NEEDS.

Our proximity to Los Angeles requires the Los Angeles County authorities to commit to this hospital those in a serious and critical physical condition as they can not take the long trip to the other institution. This naturally increases our death rate and also it is difficult to give them the proper care without a receiving and treatment building. There are only two tubs in the two cottages now being used for receiving patients and this is our entire hydrotherapeutic equipment.

The people in the southern part of the state are entitled to an institution where their friends and relatives can receive care and at the same time the proper hospital treatment. I am asking for a receiving and treatment building with a capacity of 160 patients.

To care for our great increase the next two years we should undoubtedly have four more cottages of the type just being completed which will house 480 patients.

Next to the need of a receiving and treatment building, this institution is very greatly in need of a building for the care of noisy, violent and disturbed patients. The buildings now constructed are entirely lacking in single rooms and it is impossible to care for the chronic disturbed and violent patients without such a building both for the protection of other patients and the proper treatment of the disturbed and violent ones. I am asking for two cottages to hold approximately 164 patients to care for this class.

At the present time there are absolutely no quarters for employes except a dormitory over the dining room. The balance of the employees are living in disturbed and noisy wards. Quarters should be provided not only for the employees we have at the present time but for the large increase that we expect with the increase in patient population.

This institution has had no room or building suitable for amusements or religious services. We receive frequent complaints from friends and relatives asking why we do not provide some form of amusement. By all means an assembly hall and chapel should be built, even though of small capacity.

We are greatly in need of cottages for our assistant physicians, as they are living in small buildings of two rooms which are very inadequate and cramped, especially for a family having children. The business manager and secretary are also living in very small buildings that could be used for housing employees or nightwatchmen.

There is no lighting system on the grounds of this institution and this is very badly needed.

An addition to the septic tank is necessary to care for our increase in population.

The present smokestack is only a temporary one and can not care for our increased boiler capacity. It is completely rusted through and about ready to fall down.

We should have a regular chicken yard, as the present chicken quarters are only temporary and the chickens are being cared for in small coops.

We should by all means have a farm colony building in order that the patients can avoid the traveling back and forth from the institution and be at the farm ready to go to work and leave work without losing the long time taken in traveling to and from the institution.

In presenting these numerous requests I only ask for actual needs. The many items of building and equipment that are being used in other institutions and thought necessary for them I have eliminated.

I am sure that the public will approve of my earnest desire to give them efficient and real hospital service and I hope and trust that the day is not far distant when we can discontinue merely custodial care, cease to be a hospital in name only, and become a genuine hospital taking equal rank with the other state hospitals of the country.

Yours respectfully.

EDWIN WAYTE,
Medical Superintendent.

REPORT OF MEDICAL SUPERINTENDENT OF THE SONOMA STATE HOME.

ELDRIDGE, CALIFORNIA.

MR. W. D. WAGNER,
Director, Department of Institutions,
Sacramento, California.

DEAR SIR: Herewith I submit a report of the biennial period, ending June 30, 1924.

As an introduction, permit me to call your attention to some data taken from our statistical tables, to wit:

At the beginning of the biennial period, July 1, 1922, there were enrolled 1808 patients, 895 males and 913 females. At the close of the period, June 30, 1924, there were 2225 patients, 1149 males and 1076 females. Six hundred nine patients were received during the two years, 340 males and 269 females. Fifty-nine males and 68 females, totaling 127, died during the period and 62 males and 38 females, totaling 100, were discharged to parents or guardians or transferred to other state institutions. Seven hundred thirty-six applications for admission were received during the biennium and we had a waiting list on June 30, 1924, of 1019 applicants. A recent estimate of the feeble-minded in California not cared for in institutions gave an approximate total of 16,000.

The general health of our patients has been good. An epidemic of diphtheria developed in May, 1923, and continued over such a long period of time that we thought best, in order to combat the disease and to prevent further epidemics, to make a Schick or Kellogg test on all patients and immunize those who reacted to the test with toxin-antitoxin. With the aid of the State Board of Health this was done and is being continued on all new admissions and those returning from parole.

To date we have sterilized 753 cases, 279 during the biennial period. Tonsils and adenoids were removed where indicated. Also operations for other conditions, totaling 102. Eleven hundred and forty cases were treated at the hospital during the two-year period and those sent for clinical dressings, etc., numbered 13,903.

Vaccinations, Wassermanns and the Schick or Kellogg tests are continued on every case admitted, in addition to the complete physical and mental examinations.

Treatment of epilepsy has not been gratifying but in selected cases we have given our patients the benefit of various remedies with a small amount of success. Individual treatments must be long continued if even partial success in the treatment is to be attained. We have started some poly-glandular treatments but as this is rather a new treatment with us, I am not prepared to give any definite data regarding same.

I am glad to report that the last two years have been full of constructive work at this institution. This has been very gratifying and it gives me pleasure to report the following permanent improvements, additions, etc.:

Assembly hall and school building.

Assistant physician's cottage.

One-story building for female patients (concrete).

Two employees' cottages, totaling 43 rooms.

One cottage at Farm Center to house 30 patients.

Addition to Sealight Camp to house 25 patients.

Complete remodeling and changing about of the main kitchen, officers' and employees' dining rooms; also a new kitchen range and other equipment installed. Complete remodeling and changing of refrigerating and ice-making plant.

Paint shop.

Two-story garage for state cars.

Electrical substation and underground wiring system nearly completed (this work stopped on account of shortage of funds).

Steam service line installed to the most southern group of cottages for female patients.

Alterations and improvements to the old manor house.

Playground equipment installed about many of the cottages and the main playgrounds.

One new poultry house built and some of the older buildings at the poultry ranch remodeled.

New wire fences along the county road, chicken ranch and playgrounds.

An additional 30 acres of orchard planted and 10 acres replaced.

A number of new roads, sidewalks, gutters, etc., built about the institution.

During the seventy-sixth fiscal year a new water distribution and automatic sprinkling system for lawns was started and is still in the course of installation.

One new bake oven.

A fire trail, approximately 4 miles long and 100 feet wide, was established this past summer on the western end of the main property, the land being chiefly mountainous and covering the main water sheds. This work was done under the direction of and by patient labor.

DAIRY, FARM, ETC.

Dairy.

We have made an earnest endeavor to develop our dairy herd into a herd of first class cows and the production has averaged throughout the last fiscal year 4.28 gallons of milk per cow per day at an average cost of production of $0.127 per gallon. This field of development, if properly directed and managed, will return an increased profit from year to year.

Poultry.

A large number of eggs are required and therefore poultry raising, or, more strictly speaking, egg production, is a business that requires close care and wise management. For the first time in the history of the institution our poultry business has been successful and profitable. We have raised some thoroughbred cockerels, some of which we have sold to other institutions, and our egg production averaged over 120 eggs per hen per year. We are also able to give our employees and patients fowl to eat occasionally.

Hogs.

We have not accomplished what we would like with hogs, but plan to build up our piggery.

Beef.

On the Reynolds ranch, where there is much pasture and some waste land, we have supported a small beef herd, as well as dry cattle. This alone makes this ranch profitable.

Fruits.

I feel there can not be too much fruit raised for institutional use, as fruit forms a very necessary part of our diet. We have during the two-year period canned

24,610 gallons of various kinds of fruit and vegetables and dried 92,875 pounds of different kinds of fruit. New orchards planted will help take care of the ultimate growth of the institution. All the above means less fruit to purchase, and, if an institution can produce above the average, it creates an atmosphere that is healthy for the state, and the community in which it is located looks upon it as a real asset. This is what we are striving for.

SCHOOL DEPARTMENT.

The educational work has gone on nicely and we now have nine teachers as follows:

4 teachers for grade work.
1 teacher for kindergarten.
1 teacher for domestic science.
1 teacher for arts and crafts.
1 teacher for music.
1 teacher for physical culture.

The average school attendance for the school year was 570 per day.

PAROLE WORK.

I am pleased to report that the parole work has been very satisfactory, especially while we had full-time parole workers, which we hope to have again. Eight hundred thirteen patients have been paroled, many to parents and guardians and many have been placed at some pleasant occupation, earning from $15 to $60 monthly. May I add that the parole of these patients means an annual saving of approximately $110,000 to the state for their care and therefore many times over pays for the services of social workers. It also tends to make the higher types (who are usually the problem) more satisfied with institutional life, knowing if they behave and take to proper training they will have a chance to go back into society. The feeling they have of becoming self-supporting means a great deal to these individuals. Of course, the majority of the cases are sterilized before being paroled, this having been our policy since 1918.

AMUSEMENTS AND RECREATION.

The care of our people involves not only provision for food, clothing, shelter, medical attention and education, but also provision for recreation, entertainment and amusement. This to help make happiness, health and contentment, and with this end in view we have moving pictures, entertainments, parties, picnics, ball games and much good playground apparatus, including a large merry-go-round. We make Christmas and the Fourth of July banner days for entertainment and amusement. We also have Sunday school and church services. Last Christmas we had a Christmas tree on the front lawn for the first time.

SPECIAL INSTITUTIONAL NEEDS.

Two cottages for patients, including furnishings and service connections.

Repairs, improvements and equipment at dairy, poultry yard and piggery.

To finish underground electrical system, street lighting and rewiring some of the older buildings.

Completion of the sewage disposal plant.

Bake oven.

New garages for employees.

Water development.

A general, receiving and isolation hospital, including furnishings and service connections.

One cottage for assistant physician, including furnishings and service connections.

One cottage for employees, single men working days, 30-room capacity, including furnishings and service connections.

An addition of six rooms to the present night cottage for women, to be used for married couples working nights, including furnishings and service connections.

Two additional schoolrooms.

New first-class road connecting the institution with the new state highway, which is in the course of construction from Santa Rosa to Schellville, the road to be placed on our own property under the supervision of the State Highway Commission.

In May, 1924, I attended the meetings of the National Association for the Study of the Feeble-Minded held in Washington, D. C., and the American Psychiatric Association held in Atlantic City. I also visited a number of institutions in several of the eastern states. The problem of the defective delinquents was discussed at length at one of these meetings and the consensus of opinion was that they should be placed in a separate institution or in a separate unit of a penal or correctional institution and given rigid military discipline in an endeavor to bring order out of disorder. I visited such a unit at the state prison at Bridgewater, Massachusetts.

Respectfully submitted.

F. O. Butler,
Medical Superintendent.

REPORT OF MEDICAL SUPERINTENDENT OF THE SOUTHERN CALIFORNIA STATE HOSPITAL.

PATTON, CALIFORNIA.

HON. W. D. WAGNER,
Director State Department of Institutions,
Sacramento, California.

DEAR SIR: I have the honor to submit herewith the following biennial report of the Southern California State Hospital, covering the biennial period ending June 30, 1924:

MOVEMENT OF POPULATION.

A synopsis and analysis of some of the more important tables, which are submitted herewith, will show that our total admissions for the period were 1435; discharges, not including transfers to other institutions, 979; deaths, 323. Our admissions for the seventy-fourth fiscal year were 787, which were the highest of any year during the past six years.

In spite of the fact that during the past eight years the Norwalk Hospital has been functioning, making two institutions for southern California instead of one, there has been no particular reduction in the number of patients committed to this institution. This is probably due to the fact that up to the present time the Norwalk Hospital has not developed as rapidly as it should, with the result that this institution has been required to carry the larger per cent of the insane committed from southern California. With the construction of a receiving and treatment building at the Norwalk Hospital we should be greatly relieved from the large number of commitments we are now receiving.

Believing that the Norwalk institution will make a normal progress from now on our requests for additional housing facilities in this institution are limited to the reconstruction of the east and west wings.

EARTHQUAKES.

On July 22, 1923, at 11.28 p. m. a violent earthquake visited this institution, wrecking wards 1, 2, 3, 4, 5, 6 and 7, in which were housed 589 patients, making it necessary to remove this number of patients out of these wards immediately. They were crowded into other portions of the hospital until such time as we could secure proper authority to transfer patients to other institutions to relieve our distressful conditions.

On July 28, 1923, we transferred 130 female patients to Norwalk. On October 10, 1923, we transferred 25 male patients to Stockton and 60 female patients to Napa; 40 male and 35 female patients to Mendocino, making a total transfer of 290 patients to other hospitals.

Immediately following this calamity we proceeded as rapidly as possible to construct four new patients' cottages, with a capacity of 75 beds each, to meet the overcrowded condition. During the summer months we were able to sleep many patients out of doors but during the winter time it was very difficult, indeed, to give the patients the

care that they should have. The first of these four cottages was completed and opened May 1, 1924; the second, June 6, 1924; the third was practically completed at the close of the biennial period, and the fourth cottage well under construction. This has served materially to relieve the overcrowded condition.

Fortunately we had constructed three new cottages for patients from the 1921 appropriations. One cottage opened July 28, 1922; one October 16, 1922; and one December 4, 1922, giving us a total capacity in these cottages of 210 beds.

PURCHASE OF NEW LAND.

In July, 1923, we completed the purchase of the Shay property at a total cost of $36,670, and consisting of approximately seventy acres. This gives us a total holding in the artesian belt, two and one-half miles from the main hospital, of one hundred and sixty-five acres of first-class farming and gardening land.

CHANGES IN INDUSTRIAL DEPARTMENTS.

During the period we completed a new two-story industrial building, 30′ x 100′.

In the upper story we have installed our sewing department, where all the bed linen, female clothing, etc., is manufactured by female patient help, and on the first floor we have transferred from the basement our furniture, basket and brush shop, where we have been able to manufacture fibre cord furniture for all of our new cottages and for replacements on several of the old cottages.

Removing the furniture shop from the basement of the main building has disposed of a very serious fire hazard, besides giving the patients a much more comfortable quarter in which to perform their work. The same may be said of the sewing room, which was also housed in the basement.

CHANGES IN OFFICIAL STAFF.

We have been fortunate in having few permanent changes in our official staff during the biennial period. Dr. E. W. Thompson resigned January 31, 1924, after giving the hospital four years of very satisfactory service. Dr. J. C. Steenberg was appointed to succeed Dr. Thompson April 1, 1924. Mrs. Katherine Larimer was appointed parole officer June 1, 1924. Mrs. Larimer's duties will be to visit paroled and discharged patients and keep the institution in much closer contact with those who were former patients here. This will, undoubtedly, enable many patients to remain out of the hospital longer than if they received no supervision after leaving on parole or being discharged.

OCCUPATIONAL THERAPY.

In the successful care and treatment of the mentally ill this therapeutic agent has proven of primary importance, and during the past biennium has been gradually extended to include a much larger number of patients committed to this hospital.

Occupational therapy serves a double purpose. Among the recoverable type of patients it promotes materially their chances for recovery and does much to make such recovery more stable. Among the incurable types it serves to prevent deterioration and thus does much to make

the patients' residence in the hospital more tolerable and bring more happy and abundant lives to those committed to our care.

Authorities are constantly pointing out the great remedial and reconstructive values inherent in recreation and occupation as pertains to the modern care and treatment of the mentally sick. Through a widespread adoption of community programs of recreation, entertainment and occupation we may hope to develop community life comparable to that which exists in outside communities and in so far as this can be attained we may expect a more suitable environment for all types of patients committed to the state hospital. The various recreations, entertainments, occupations and industries become a matter of community pride just as the various activities of any normal community are of particular interest to the residents of such communities.

Each hospital should have its various shops and industries, a periodical magazine in which is published hospital news, its moving picture and vaudeville theaters, its chapel for religious services and other similar institutions which are found in normal communities. Men and women are committed to our hospital for the reason that they can not get along in the outside communities and an environment should be created, therefore, to the end that they may get along on the inside with a fair degree of comfort and such pleasure as it is possible to give.

Many dementia præcox cases committed to our hospital are so engrossed with their delusions and hallucinations that it is very difficult, indeed, to engage their attention or interest in anything whatsoever, with the result that these patients will assume a shut-in attitude of conduct and become completely deteriorated, ultimately leading a simple vegetative existence. Inasmuch as it is easier to leave them alone in their deterioration the average nurse will not make a determined effort to arouse them from their lethargy and interest them in some form of occupation. The result is that this particular type of patients eventually find their residence in the chronic custodial wards, where they spend the rest of their lives in a state of progressive dementia. Undoubtedly, a very large per cent of such cases, if taken early, could be trained to engage in some line of occupation and thus prevent the great deterioration which so frequently occurs.

In order to accomplish this the hospital should have on its nursing force two male and two female special nurses, who know how to do many things along the line of occupational training and possess the requisite patience to deal with such cases. Each new præcox case admitted should be placed under the instruction of one of these special nurses, being careful not to have too many under the care of each nurse at one time in order, so far as possible, to give each patient constant and personal attention. By this means many of these patients can be reclaimed to the point where they will become interested in some line of work. As each patient develops the habit of employment he or she may be assigned to some definite task and the nurse's attention directed toward the training of a new case.

In order to provide for this line of habit, or occupational training, the hospital must have numerous industrial enterprises, into which departments these patients may be graduated. To this end every possible thing which can be made with patients' help should be manufactured; for the women, weaving, basketry, crocheting, lace making, rug making, embroidering, etc, and for the men, weaving, basketry,

furniture making, brush making, toy making, printing, etc. All of these various activities may be used as preindustrial departments from which the real industries such as laundering, dairying, farming, gardening, orcharding, canning, etc., will prove to be the departments in which patients may be ultimately employed. Every effort should be made to provide additional types of work to the end that, as near as possible, every able-bodied patient will have some task to perform.

We are now making all of the chairs, tables, settees, floor lamps, ferneries, flower baskets, waste paper baskets, brooms, brushes, men's and women's clothing, bed linen, laundry nets, shoes, slippers and door mats used in this institution. Besides, we make a large portion of the harness and weave a large portion of the toweling, ticking, shirting, denim, rugs, runners, etc. Inasmuch as the law forbids the sale of such products in the open market our greatest difficulty lies in finding an outlet for our products, being confined entirely to the hospital requirements. We have outfitted completely a number of wards with our homemade furniture, which is far more comfortable than anything we could afford to purchase and at a cost very much less than an inferior product could be purchased for.

What we need most is more room to house additional occupational activities. With the reconstruction of the east and west wings we hope to have available a large basement space under each wing for the extension and enlargement of our occupational program.

I am pleased to have this oportunity to express to you my great appreciation of the very helpful attitude you have always shown toward our difficult problem. Your constant and sympathetic interest in the care of our patients and your wise counsel in our various affairs has been a constant source of satisfaction and encouragement to our entire hospital organization.

To the officers and employees of the hospital I also wish to express my appreciation of their loyal and efficient service during the past biennial period.

Respectfully submitted.

Jno. A. Reily,
Medical Superintendent.

REPORT OF MEDICAL SUPERINTENDENT OF THE STOCKTON STATE HOSPITAL.

STOCKTON, CALIFORNIA.

MR. W. D. WAGNER,
Director Department of Institutions,
Sacramento, California.

DEAR SIR: Herewith you will find my report for the seventy-fifth and seventy-sixth fiscal years concerning the movement of patients, moneys received and expended and other activities about the hospital.

The sum of $177,200 was appropriated for the building of three cottages at the state farm, furnishing the psychopathic building, boring a new well and various improvements about the engine room. This money has been expended except that set aside for the completion of one of the cottages at the farm which is well under way. Our psychopathic building has been completed and occupied for several months and we find it a great benefit in enabling us to segregate our new admissions, as by the use of this building we are able to keep our neurasthenic and quiet patients from being disturbed by those who are noisy and restless. It is our intention to have all recoverable cases transferred from the receiving hospital to the psychopathic building in order to keep them from coming in contact with the chronic and badly disturbed.

On July 9, 1923, Mr. W. H. Chesnutwood, the business manager of the Stockton State Hospital, passed away after a short illness. Mr. Chesnutwood's death was a great loss to the institution as he had been the business manager for a great many years and was thoroughly qualified in every way to attend to the duties of the office. Mr. A. G. Keagle, who has been interested in the farming industry of this country for a number of years, was appointed to succeed Mr. Chesnutwood, and is carrying on the work in an entirely satisfactory manner.

As per your request I am submitting a short article on sterilization of the insane as practiced in the hospitals for the insane in California and the Home for the Feeble-Minded at Eldridge, Sonoma County.

In 1909 the law was passed authorizing the superintendents of the various state hospitals and the Home for the Feeble-Minded to sterilize certain types of the insane and feeble-minded. It is first necessary to obtain the consent of the director of the Department of Institutions and the secretary of the State Board of Health before the operation of sterilization can be performed upon a patient. It is not necessary to obtain the consent of the relatives of the patient or of the patient himself but it has always been our custom to obtain the consent of the relatives when possible. We find very few relatives who make any objection, in fact, we have many requests from relatives to have this operation performed. If the family history is bad, that is, showing insanity in both sides of the family or cases appearing in two generations we operate whether the relatives consent or not, as long as the director of the Department of Institutions and the secretary of the State Board of Health have given their consent. There have been sterilized in the six hospitals for the insane and the Home for the Feeble-Minded, 3900 patients, 1261 of which have been at the Stockton

State Hospital; of these 858 were men and 403 women. We have been operating for sterilization for the past fourteen years, beginning in 1910, soon after the law became effective. The first case was that of a woman who had murdered her three young children, fearing that they would become insane, as her sister (who was in the Mendocino State Hospital) and her mother were insane. She had shown no noticeable mental symptoms to her family except depression, following the loss of her boy from diphtheria, before commitment to this hospital. She is still a patient here suffering from dementia præcox. She has been home on parole under supervision for short periods of time.

As I could find no literature on the subject for the operation of sterilization on the male, at that time, I inquired of one of the leading surgeons of San Francisco, who was visiting me, if he had ever sterilized a man. He replied that he had so I asked him if he would operate for us as I was unfamiliar with the technique. The operation he performed consisted of a large incision in both pubic regions such as one would make in performing a hernia operation. As a result the patient was confined to bed for over two weeks. This extensive incision I knew would not do, so after thinking the matter over for some time we decided to cut into the scrotal sac and separate the vas from the cord. This we found to be very difficult and bunglesome. Dr. M. H. Smyth, our first assistant physician, then devised the following technique for the operation of sterilization on the men: "Roll the vas between the thumb and index finger, separating it from the other structures of the cord. Fix it close against the skin of the scrotum with small tenaculum forceps. At this point make incision over the vas about 1 c.m. in length down to and exposing the vas. Lift up the vas with a strong curved needle and cut out a portion one-half inch in length. Leave the lower end free to drop back into the sheath. Tie the upper end with fine silk ligature. Sew up the sheath with fine catgut, leaving the upper end of the vas outside of the sheath, to prevent possible union of the cut ends of the vas. Operation is done in a few minutes and in insane patients best done under general anæsthetic, preferably gas. Operation is practically bloodless."

The operation on the women is as follows: "Incision is made in the median line of the abdomen—one to one and one-half inches in length, just above the pubic bone. The index and middle fingers are inserted into the abdomen and the fundus of the uterus is located by touch. The tips of the fingers are carried outward along the tube. The tube is drawn up into the incision and clamped with a small hemostat at the isthmus—this being the narrow portion of the tube and relatively free from blood vessels, making the operation practically bloodless. An incision about one-half inch in length is made in the serous covering, exposing the tube. The tube is picked up with thumb forceps and one-half inch is cut out. The uterine end of the tube is ligated with fine silk; the incision in the serous coat is closed with continuous fine catgut suture. The same procedure is done on the opposite tube. Abdominal wound is closed in layers. General anæsthetic is preferable. Operation in ordinary conditions can be completed in fifteen minutes. Patient is usually left in bed one week."

The law permitting the sterilization of the insane to my mind is one of the best things that has been done to prevent the unfit from repro-

ducing their kind. Besides this feature of the law, in many cases of the men the operation has had a very beneficial effect upon their mental condition, that is, we have had numerous cases whose mental condition improved up to a certain point and then remained stationary. After these patients were sterilized many of them recovered completely and have had no recurrence of their mental trouble. I might cite three or four cases showing this improvement.

(1) "J. T. was committed to the Stockton State Hospital in 1914, suffering from manic depressive insanity, maniacal type. He was badly disturbed, restless, excited, and had to be spoon fed. He eventually recovered from the attack and was taken home by his father on parole. After being out for a couple of months he had a recurrence of the attack and was returned to the hospital. He again recovered from the attack and was finally discharged as recovered. In 1917 he was re-committed suffering the same form of mental disturbance, went through the same circle, was paroled and again returned. At this time he was sterilized and recovered in a very short time; was taken home and finally discharged as recovered. About three years ago I met the young man in Oakland and he informed me that since his operation he had had no further nervous or mental trouble and was in perfect health."

(2) "W. L. This young man was suspected of having set fire to some packing houses. I was sent for by the district attorney of the county and while the boy showed no marked mental symptoms he was retarded in his speech and it was three or four seconds before he could seem to grasp what was said to him. Dr. Hatch, then general superintendent of state hospitals, who was with me, suggested to the judge of the superior court that the young man be committed to the Stockton State Hospital, where he could be sterilized, in hopes that the operation might benefit him. This was done and shortly after his admission the operation was performed. In two months from the time of the operation I had an interview with him and his mental condition seemed to be absolutely normal. In another month he was discharged as recovered. He was subsequently married and a year ago accompanied by his wife called at the hospital and I had a long conversation with him. He informed me at the time, that since leaving the hospital he had been well and had had no nervous or mental disturbance."

(3) "F. J. was committed to the Stockton State Hospital from the Folsom state prison suffering from manic depressive insanity. This young man had been in the penitentiary for about a year and a half and his mental condition finally became so bad that he was sent to the hospital for treatment. He would respond somewhat to hydrotheraphy but never entirely cleared up for any length of time. Soon after W. L. (the previous patient mentioned) had recovered Mr. J. sent for me asking that we sterilize him as he had seen the beneficial effect of the operation on the other man. This was done and in a short time Mr. J's condition improved to such an extent that we considered he had entirely recovered. I wrote to Governor Johnson, who was governor at that time, recommending that the patient be granted a pardon as I felt that he was insane at the time he committed the act for which he was sent to Folsom. This pardon was granted and shortly afterwards the patient was discharged from the hospital as recovered. Since that time he has been living in the vicinity of Stockton and I have seen him on

numerous occasions and he says that he is well and appears normal." We have a number of cases similar which I could describe at length.

In talking to male patients who have been benefited by the operation many claim that in about two weeks after the operation they begin to feel better, that is, their mentality improves and they feel stronger both mentally and physically. I have had a number of men at the hospital ask me to sterilize them after they had seen the beneficial effects of the operation on other patients. In cases of the women we have no direct beneficial effects excepting the fact that their minds are relieved from the fear of a future pregnancy. Many of our patients who have had a psychosis following childbirth, refuse to leave until they have been sterilized, feeling that another pregnancy would mean a recurrence of the psychosis.

Three or four classes from the universities visit us each year in order to obtain the benefits of our clinics which are held for them and also to view our operations for sterilization. All these young men and women have gone away as missionaries for the operation as we have had a number of women, whose mental condition is such that they should not bear children, come to the hospital for the purpose of sterilization at the suggestion of these nurses and other field workers.

In closing I must commend Governor Richardson for his wisdom in appointing you as the director of the Department of Institutions, for I know with your keen business ability and great store of common sense you will in the future as you have in the past make an unqualified success of the position.

Yours truly,

Fred P. Clark,
Medical Superintendent.

DIPHTHERIA IMMUNIZATION IN AN INSTITUTION.

By F. O. Butler, M.D., Medical Superintendent, Sonoma State Home.

Until the discovery of antitoxin in 1890 by Dr. Von Behring, diphtheria was one of the most dreaded diseases that the medical profession has had to combat.

The mortality was extremely high in all epidemics as well as in the sporadic cases. Even with the introduction of antitoxin, which has been one of the greatest discoveries known to the profession and is a specific and definite cure if used in time, yet it has not filled the bill, so to speak, for the reason that many cases are overlooked, being considered as ordinary tonsilitis or some other throat condition. Frequently medical aid is not sought and the patient is permitted to get in a very serious condition before the severity of the disease is realized and oftentimes it is too late for antitoxin to have the desired effect, and in some instances the antitoxin receives the credit for the cause of death when in reality it was due to the absorption of toxins before the patient received the treatment. However, we all know that, if antitoxin is given in due time, not waiting for a definite diagnosis, the mortality is practically nil, but it does not preclude subsequent attacks, which may occur in a few weeks, months or years.

The cost of such treatments, if given in quantities sufficient to overcome the toxins already disseminated throughout the system, is not small by any means, and especially if it is found necessary to repeat the injections many times, which frequently occurs, and inject others who have come in contact with the patient and require a prophylactic injection, which should be the procedure in all instances.

I have been connected with the Sonoma State Home for eleven years and have experienced several mild epidemics of diphtheria and have seen many sporadic cases, all of whom received antitoxin at once, even though the case were only a suspect, always keeping a large supply on hand.

In an institution of this kind, with feeble-minded and epileptics numbering several hundred, some departments housing as many as 130 patients and too frequently crowded beyond the normal capacity, with many under 12 years of age and who, on account of their mental deficiency, have not been placed in the public schools or mingled with normal society and where they have not had an opportunity to so readily contract the diseases of childhood, the inmates are naturally very susceptible to contagious diseases, making us always on the alert to prevent outbreaks of any nature, but diphtheria has been the one to cause us the most concern.

In May, 1922, to June, 1923, diphtheria was quite prevalent in the institution, regardless of our best efforts for isolation, and, with all cases receiving antitoxin promptly, we could not stamp out the disease. We had already spent a considerable amount of money just for antitoxin alone, not counting the loss of time amongst our employees and the brighter patients who do important work about the institution. The total number having the disease during this period was 93 patients and 9 employees, totaling 102, with one death and a known record of 313,500 units of antitoxin being administered at an approximate cost of $200 for the material.

With our inability to become free from the continued developing of new cases, we decided, even though it appeared quite an undertaking, to immunize the entire patient population and the employees who cared to submit with toxin-antitoxin all those reacting to the Schick and Kellogg test.

Through the kindness and courtesy of Dr. W. H. Kellogg, director, State Hygienic Laboratory of the State Board of Health, and his corps of able assistants, each case was given one of the tests, and out of 1614, the net population at that time, who were so tested, 331, or 20.5 per cent, were found not immune, regardless of whether they had contracted diphtheria during the more recent epidemic. The 331 cases, who reacted or were found not immune, were each given an immunization injection of 1.0 c.c. toxin-antitoxin one week apart until three injections had been given at a cost per patient of approximately 50 per cent of what 1000 units of antitoxin cost.

Six months after the last injection of toxin-antitoxin given the orignal group, 310 of the 331 who were immunized and still remained in the institution, were reexamined and 79, or 25.4 per cent, were still found not immune, this number again receiving the same immunization as was originally given—three injections of 1.0 c.c. toxin-antitoxin. These 79 cases, likewise the others who are on the original test, found not immune and still remaining in the institution, will be reexamined after a year's time from the last examination. It was decided that a lapse of six months is not sufficient for all to become immunized.

All new admissions and those returning from parole, who have not been examined or immunized before leaving the institution, are given the Kellogg test within a week

of their entrance and, if found not immune, are immediately given the usual series of three injections. Therefore, each and every patient who was in or has been in the institution since the original examination in 1923 has been examined and immunization injections given if indicated. These new admissions and returns from parole to October 1st of this year total 500, and of this number exactly 250, or 50 per cent, were found not immune on first test, which is quite different to the 20.5 per cent found not immune on the original 1614 examined, indicating there is far greater immunity in an institution than those living outside by approximately 150 per cent.

Amongst many of our patients many are of low vitality and several bedridden, yet not a case has developed any untoward effects from the treatment. For such good results we can not help but feel that considerable credit is due to the new toxin-antitoxin formula we have been using as gotten up by Parks of New York.

Of the 93 patients, who had diphtheria during the more recent epidemic mentioned above and still remaining in the institution at the time of the testing, 15, or 16.6 per cent, were found not immune, showing the active disease did not immunize them but a very short time.

Since the original examination and treatments and all those following, only three cases of diphtheria have developed in the institution, and two of these cases were attendants who had not been examined or immunized; the other one, a very low grade patient mentally and whose diagnosis was questionable, died before anything definite could be determined, but we are of the opinion that one of the attendants contracted the disease outside the institution and spread it to the other, as they were both employed in the same building, also where the patient just mentioned was housed.

In regard to the age as being a factor in susceptible cases, we found the percentage was practically the same for both adults and children, the lowest percentage in any one building housing adults being 7 per cent to that of 29.2 per cent in a department comprising rather a mixed group, but chiefly children and young adults, where most of the cases developed diphtheria during the recent epidemic. In cottages housing young children, the proportion was almost identical with that of the other wards of adults past middle age, the percentage being 19.8 per cent in the younger element against 19 per cent in the older. We were rather surprised to find such a condition, for we were always under the impression that children were much more susceptible than adults.

In conclusion, I can not lay too much stress on the use of toxin-antitoxin in any institution, for our experience has taught us that it is not only so much more economical from every point of view, but that it protects each and every individual against diphtheria and prevents future epidemics and conserves human lives.

APPENDIX

STATISTICS OF STATE HOSPITALS AND SONOMA STATE HOME

STATEMENTS OF REVENUE AND EXPENDITURES, ETC.

STATISTICS OF STATE INSTITUTIONS.

Statement Showing Normal Capacity and Population, California State Hospitals, July 1, 1924.

Hospital	Capacity			Population			Excess
	Male	Female	Total	Male	Female	Total	
Agnews	854	637	1,491	982	826	1,808	317
Mendocino	561	359	920	726	359	1,085	165
Napa	1,444	1,217	2,661	1,422	1,245	2,667	6
Norwalk	465	413	878	526	445	971	93
Southern California	1,109	880	1,989	1,290	1,009	2,299	310
Stockton	1,548	907	2,455	1,673	1,134	2,807	352
Totals	5,981	4,413	10,394	6,619	5,018	11,637	1,243

Table of dental services performed at the various institutions July 1, 1922, to June 30, 1924.

	Stockton State Hospital	Napa State Hospital	Southern California State Hospital	Mendocino State Hospital	Sonoma State Home	Norwalk State Hospital	Whittier State School	California School for Girls
Dental examinations	2,927	2,829	9,552	2,716	5,553	3,200	750	714
Dental prophylaxis	1,231	1,876	7,590	637	359	360	310	280
Extractions	5,980	3,371	3,508	456	1,292	1,028	197	140
Fillings, cement, amalgam, gutta percha and temporary	1 799	2,831	4,405	305	868	700	800	735
Treating teeth	344	350	212	29	37	272	238	280
Treating gums	291	629	1,320	32	102	256	140	300
Nerves devitalized	80	79	28	.....	19	66	42	30
Artificial dentures made	46	.....	60	.....	7	.....	.....	.....
Artificial dentures repaired	41	58	116	21	19	40	12	5

Stockton, Napa and Southern California State Hospitals each have a local dentist, who devotes his entire time to the care of the patients of his respective hospital; Mendocino State Hospital and Sonoma State Home are served by a dentist who divides his time between the two institutions; Whittier State School, California School for Girls and Norwalk State Hospital have a dentist who divides his time among the three. In addition to the above, Agnews State Hospital and Preston School of Industry furnished dental service to the inmates of those institutions, the same being performed by an outside dentist.

MONTHLY RECEIPTS AT THE SIX STATE HOSPITALS, FROM JULY 1, 1920, TO JUNE 30, 1924.

From July 1, 1920, to June 30, 1921.

Months	Stockton	Napa	Agnews	Mendocino	Southern California	Norwalk	Totals
1920—July	$7,550 55	$11,827 62	$10,002 58	$12,109 82	$7,712 70	$2,093 15	$51,296 42
August	8,122 48	12,245 55	7,465 10	7,981 19	7,107 26	4,003 39	46,924 97
September	6,210 71	8,643 55	8,616 63	13,971 42	11,412 43	1,378 57	50,233 34
October	6,122 07	8,409 41	8,370 41	12,853 89	6,599 00	1,720 64	44,075 42
November	7,777 54	9,547 83	7,283 41	11,129 60	7,345 63	1,415 97	44,499 98
December	8,745 73	9,850 61	10,327 97	2,640 45	8,160 10	1,721 79	41,446 65
1921—January	8,401 74	13,277 33	8,593 94	16,444 63	7,142 15	4,290 92	58,150 71
February	8,413 22	12,205 79	7,692 81	8,617 36	6,008 04	1,565 74	44,502 96
March	7,578 55	9,489 94	8,104 67	10,053 27	7,510 99	1,922 73	44,660 15
April	11,134 81	10,962 39	9,636 99	2,594 80	12,731 48	1,993 47	49,053 94
May	9,427 12	10,750 42	7,295 21	8,962 20	7,817 88	1,747 28	46,000 11
June	7,178 40	12,141 55	7,886 00	9,048 91	6,468 22	2,238 16	44,661 24
Totals	$96,662 95	$129,351 99	$100,975 72	$116,407 54	$96,015 88	$26,091 81	$565,505 89

From July 1, 1921, to June 30, 1922.

Months	Stockton	Napa	Agnews	Mendocino	Southern California	Norwalk	Totals
1921—July	$5,498 88	$11,139 35	$9,707 02	$16,970 87	$9,046 66	$3,621 89	$55,984 67
August	6,970 25	11,078 19	9,299 15	15,829 45	6,611 36	2,247 10	52,035 50
September	8,419 74	11,092 46	8,705 19	1,388 74	8,967 67	3,078 73	41,652 53
October	5,958 29	12,493 32	8,655 85	2,597 05	7,582 24	2,485 21	39,771 96
November	7,765 01	11,908 86	9,477 34	1,818 38	8,462 04	3,026 56	42,458 19
December	7,446 75	10,542 21	9,253 41	1,797 86	5,761 56	2,380 46	37,182 25
1922—January	7,514 95	11,841 85	10,829 25	7,711 58	11,068 90	2,360 15	51,326 68
February	6,860 75	10,351 43	7,735 21	1,483 81	9,511 55	2,524 61	38,467 36
March	7,216 74	12,332 79	8,860 35	19,068 54	10,032 23	1,867 30	59,377 95
April	8,906 06	12,729 62	10,612 11	23,434 41	10,294 28	2,715 14	68,601 62
May	9,671 68	13,212 97	8,716 37	25,578 88	5,629 20	2,794 17	65,603 27
June	12,165 84	14,274 03	12,582 34	2,551 35	6,927 70	2,522 12	51,023 38
Totals	$94,394 94	$142,997 08	$114,433 59	$120,230 92	$99,805 39	$31,623 44	$603,485 36

From July 1, 1922, to June 30, 1923.

Months	Stockton	Napa	Agnews	Mendocino	Southern California	Norwalk	Totals
1922—July	$8,364 45	$11,329 49	$12,186 62	$12,363 09	$10,326 38	$9,379 77	$63,949 80
August	5,975 62	11,535 74	8,775 42	10,573 42	7,854 70	2,595 59	47,310 49
September	8,585 20	10,767 70	9,635 81	10,250 43	5,957 10	3,990 30	49,186 54
October	7,669 98	12,265 27	13,954 04	2,341 63	8,819 55	2,584 55	47,635 02
November	7,326 77	15,711 14	12,699 95	18,832 81	8,012 21	4,282 29	66,865 17
December	7,892 61	12,705 07	8,236 09	2,175 50	7,119 50	3,968 83	42,097 60
1923—January	8,743 68	13,716 11	12,440 53	19,132 26	10,003 24	3,003 35	67,039 17
February	7,505 35	11,863 04	10,011 07	9,532 03	7,632 28	5,428 89	51,972 66
March	6,874 70	10,061 39	12,426 77	9,421 26	10,124 46	5,744 65	54,653 23
April	10,565 15	10,165 75	10,914 48	14,136 90	8,920 42	4,808 74	59,511 44
May	12,961 50	15,154 49	11,535 39	2,393 89	9,709 50	3,870 99	55,625 76
June	9,119 72	12,484 06	5,899 17	6,077 61	8,986 71	5,329 73	47,897 00
Totals	$101,584 73	$147,759 25	$128,715 34	$117,230 83	$103,466 05	$54,987 68	$653,743 88

From July 1, 1923, to June 30, 1924.

Months	Stockton	Napa	Agnews	Mendocino	Southern California	Norwalk	Totals
1923—July	$7,367 38	$11,606 74	$15,565 69	$4,955 69	$8,335 07	$3,631 73	$51,462 30
August	7,368 25	11,493 25	12,550 71	1,601 15	8,756 16	2,714 21	44,483 73
September	6,560 32	8,473 71	6,983 41	1,995 13	7,664 86	3,723 26	35,400 69
October	8,748 30	9,401 33	10,553 38	3,159 93	7,832 09	3,697 68	43,392 71
November	6,144 47	13,731 89	8,662 40	2,281 33	7,586 19	2,597 55	41,003 83
December	5,857 28	10,082 95	9,715 49	3,673 09	6,794 43	2,777 96	38,901 20
1924—January	9,151 66	15,206 98	10,697 62	3,222 21	8,668 19	3,644 93	50,691 59
February	8,352 63	8,080 67	7,559 05	3,673 09	7,556 69	3,091 97	38,314 10
March	7,832 11	8,597 16	8,213 35	1,359 61	8,301 12	3,357 43	37,660 78
April	10,897 29	12,304 69	8,917 25	1,327 10	8,541 74	3,127 50	45,115 57
May	9,738 28	8,599 17	7,311 70	1,788 66	7,454 85	2,829 04	37,721 70
June	7,211 30	9,770 36	9,494 06	2,566 63	7,310 91	3,994 52	40,347 78
Totals	$95,229 27	$127,448 90	$116,224 11	$31,603 62	$94,802 30	$39,187 78	$504,495 98

EXPENDITURE AND REVENUE STATEMENT WITH PER CAPITA COSTS, SEVENTY-FOURTH AND SEVENTY-FIFTH FISCAL YEARS.

Department of Institutions.

	74th fiscal year	75th fiscal year	74th and 75th fiscal years
Expenditures for support	$8,320 74	$31,842 35	$40 163 09
Expenditures for salaries	22,093 68	18,032 61	40,126 29
Total maintenance expenditures	$30,414 42	$49 874 96	$80,289 38
Expenditures for additions and betterments			
Grand total, all expenditures	$30,414 42	$49,874 96	$80,289 38
Institutional revenue	$36,335 00	$9 60	$36,344 60
Net expenditures for maintenance	*$5,920 58	$49,865 36	$43,944 78

*Credit.

Stockton State Hospital.

Expenditures for support	$348,623 88	$328,477 89	$677,101 77
Expenditures for salaries	336,947 22	307,600 84	644,548 06
Total maintenance expenditures	$685,571 10	$636,078 73	$1,321,649 83
Expenditures for additions and betterments	130,996 96	140,392 56	271,389 52
Grand total, all expenditures	$816,568 06	$776,471 29	$1,593,039 35
Institutional revenue	$106,801 25	$99,101 28	$205,902 53
Net expenditures for maintenance	578,769 85	536,977 45	1,115,747 30
Population	2,624	2,732	
Gross maintenance per capita cost	$261 27	$232 83	
Net maintenance per capita cost	220 57	196 55	
Trust fund receipts	$24,547 39	$29,870 51	$54,417 90

Napa State Hospital.

Expenditures for support	$316,365 16	$303,406 18	$619,771 34
Expenditures for salaries	345,089 23	314,407 01	659,496 24
Total maintenance expenditures	$661,454 39	$617,813 19	$1,279,267 58
Expenditures for additions and betterments	155,584 04	67,603 85	223,187 89
Grand total, all expenditures	$817,038 43	$685,417 04	$1,502,455 47
Institutional revenue	$145,873 04	$115,350 44	$261,223 48
Net expenditures for maintenance	515,581 35	502,462 75	1,018,044 10
Population	2,553	2,609	
Gross maintenance per capita cost	$259 09	$236 80	
Net maintenance per capita cost	201 95	192 59	
Trust fund receipts	$35,744 71	$36,845 22	$72,589 93

Agnews State Hospital.

Expenditures for support	$272,450 81	$274,299 06	$546,749 87
Expenditures for salaries	211,557 71	202,243 94	413,801 65
Total maintenance expenditures	$484,008 52	$476,543 00	$960,551 52
Expenditures for additions and betterments	42,766 55	115,531 42	158,297 97
Grand total, all expenditures	$526,775 07	$592,074 42	$1,118,849 49
Institutional revenue	$140,829 88	$112,213 10	$253,042 98
Net expenditures for maintenance	343,178 64	364,329 90	707,508 54
Population	1,803	1,792	
Gross maintenance per capita cost	$268 45	$265 93	
Net maintenance per capita cost	190 34	203 31	
Trust fund receipts	$19,209 68	$14,879 86	$34,089 54

EXPENDITURE AND REVENUE STATEMENT WITH PER CAPITA COSTS, SEVENTY-FOURTH AND SEVENTY-FIFTH FISCAL YEARS—Continued.

Mendocino State Hospital.

	74th fiscal year	75th fiscal year	74th and 75th fiscal years
Expenditures for support	$188,092 47	$161,473 94	$349,566 41
Expenditures for salaries	160,076 98	148,029 13	308,106 11
Total maintenance expenditures	$348,169 45	$309,503 07	$657,672 52
Expenditures for additions and betterments	69,442 95	62,550 42	131,993 37
Grand total, all expenditures	$417,612 40	$372,053 49	$789,665 89
Institutional revenue	$103,370 62	$28,060 32	$131,430 94
Net expenditures for maintenance	244,798 83	281,442 75	526,241 58
Population	1,166	1,077	
Gross maintenance per capita cost	$298 60	$287 37	
Net maintenance per capita cost	209 95	261 32	
Trust fund receipts	$30,746 54	$14 803 56	$45,550 10

Southern California State Hospital.

Expenditures for support	$326,123 09	$275,764 15	$601,887 24
Expenditures for salaries	291,565 45	282,067 97	573,633 42
Total maintenance expenditures	$617,688 54	$557,832 12	$1,175,520 66
Expenditures for additions and betterments	60,664 51	80,888 49	141,553 00
Grand total, all expenditures	$678,353 05	$638,720 61	$1,317,073 66
Institutional revenue	$105,480 63	$100,416 26	$205,896 89
Net expenditures for maintenance	512,207 91	457,415 86	969,623 77
Population	2,517	2,284	
Gross maintenance per capita cost	$245 41	$244 23	
Net maintenance per capita cost	203 50	200 27	
Trust fund receipts	$24,062 12	$20,534 31	$44,596 43

Norwalk State Hospital.

Expenditures for support	$101,825 67	$119,991 78	$221,817 45
Expenditures for salaries	132,602 32	128,571 91	261,174 23
Total maintenance expenditures	$234,427 99	$248,563 69	$482,991 68
Expenditures for additions and betterments	122,658 12	187,484 75	310,142 87
Grand total, all expenditures	$357,086 11	$436,048 44	$793,134 55
Institutional revenue	$51,990 61	$33,999 04	$85,989 65
Net expenditures for maintenance	182,437 38	214,564 65	397,002 03
Population	675	855	
Gross maintenance per capita cost	$347 30	$290 72	
Net maintenance per capita cost	270 28	250 95	
Trust fund receipts	$7,676 92	$12,291 82	$19,968 74

EXPENDITURE AND REVENUE STATEMENT WITH PER CAPITA COSTS, SEVENTY-FOURTH AND SEVENTY-FIFTH FISCAL YEARS—Continued.

Sonoma State Home.

	74th fiscal year	75th fiscal year	74th and 75th fiscal years
Expenditures for support	$253,195 53	$240,165 48	$493,361 01
Expenditures for salaries	204,254 64	201,612 53	405,867 17
Total maintenance expenditures	$457,450 17	$441,778 01	$899,228 18
Expenditures for additions and betterments	93,287 03	192,413 53	285,700 56
Grand total, all expenditures	$550,737 20	$634,191 54	$1,184,928 74
Institutional revenue	$380,309 78	$402,124 15	$782,433 93
Net expenditures for maintenance	77,140 39	39,653 86	116,794 25
Population	1,598	1,682	
Gross maintenance per capita cost	$286 26	$262 65	
Net maintenance per capita cost	48 27	23 58	
Trust fund receipts	$9,604 39	$10,067 21	$19,671 60

Pacific Colony.

Expenditures for support	$6,875 19	.....	$6,875 19
Expenditures for salaries	4,430 18	.....	4,430 18
Total maintenance expenditures	$11,305 37	.....	$11,305 37
Expenditures for additions and betterments	.....	.....	.....
Grand total, all expenditures	$11,305 37	.....	$11,305 37
Institutional revenue	$9,529 47	$11,671 21	$21,200 68
Net expenditures for maintenance	1,775 90	*11,671 21	*9,895 31
Population	23	.....	
Gross maintenance per capita cost	½ yr. $491 54	Institution closed Jan. 15, 1923	
Net maintenance per capita cost	½ yr. 77 21		
Trust fund receipts	$11 86	.....	$11 86

*Credit.

California School for Girls.

Expenditures for support	$58,589 96	$48,202 23	$106,772 19
Expenditures for salaries	66,799 29	58,655 66	125,454 95
Total maintenance expenditures	$125,369 25	$106,857 89	$232,227 14
Expenditures for additions and betterments	35,864 86	4,287 00	40,151 86
Grand total, all expenditures	$161,234 11	$111,144 89	$272,379 00
Institutional revenue	$37,236 47	$36,091 03	$73,327 50
Net expenditures for maintenance	88,132 78	70,766 86	158,899 64
Population	153	150	
Gross maintenance per capita cost	$819 41	$712 39	
Net maintenance per capita cost	576 03	471 78	
Trust fund receipts	$1,276 75	$1,098 37	$2,375 12

EXPENDITURE AND REVENUE STATEMENT WITH PER CAPITA COSTS, SEVENTY-FOURT AND SEVENTY-FIFTH FISCAL YEARS—Continued.

Preston School of Industry.

	74th fiscal year	75th fiscal year	74th and 75th fiscal years
Expenditures for support	$145,228 63	$150,673 22	$295,901 85
Expenditures for salaries	140,697 05	121,685 15	262,382 20
Total maintenance expenditures	$285,925 68	$272,358 37	$558,284 05
Expenditures for additions and betterments	83,070 35	35,172 46	118,242 81
Grand total, all expenditures	$368,996 03	$307,530 83	$676,526 86
Institutional revenue	$106,989 47	$118,132 50	$225,121 97
Net expenditures for maintenance	178,936 21	154,225 87	333,162 08
Population	448	485	
Gross maintenance per capita cost	$638 23	$561 56	
Net maintenance per capita cost	399 41	317 99	
Trust fund receipts	$7,464 61	$6,462 14	$13,926 75

Whittier State School.

Expenditures for support	$102,770 33	$99,362 64	$202,132 97
Expenditures for salaries	118,977 56	86,126 25	205,103 81
Total maintenance expenditures	$221,747 89	$185,488 89	$407,236 78
Expenditures for additions and betterments	106,222 74	55,553 29	161,776 03
Grand total, all expenditures	$327,970 63	$241,042 18	$569,012 81
Inztitutional revenue	$87,390 69	$81,731 44	$169,122 13
Net expenditures for maintenance	134,357 20	103,757 45	238,114 65
Population	300	301	
Gross maintenance per capita cost	$739 16	$616 24	
Net maintenance per capita cost	447 86	344 71	
Trust fund receipts	$5,664 73	$3,559 04	$9,223 77

Industrial Farm for Women.

Expenditures for support	$16,586 93	$192 80	$16,779 73
Expenditures for salaries	14,652 40	1,800 00	16,452 40
Total maintenance expenditures	$31,239 33	$1,992 80	$33,232 13
Expenditures for additions and betterments	31,587 76	45 50	31,633 26
Grand total, all expenditures	$62,827 09	$2,038 30	$64,865 39
Institutional revenue	$1,469 75	$525 23	$1,994 98
Net expenditures for maintenance	29,769 58	1,467 57	31,237 15
Population	37	Institution closed June 15, 1923	
Gross maintenance per capita cost	$844 31		
Net maintenance per capita cost	804 58		
Trust fund receipts			

EXPENDITURE AND REVENUE STATEMENT WITH PER CAPITA COSTS, SEVENTY-FOURTH AND SEVENTY-FIFTH FISCAL YEARS—Concluded.

Industrial Home for the Adult Blind.

	Institution			Factory		
	74th fiscal year	75th fiscal year	74th and 75th fiscal years	74th fiscal year	75th fiscal year	74th and 75th years
Expenditures for support	$30,477 68	$28,392 17	$58,869 85	$34,929 59	$32,339 47	$67,269 06
Expenditures for salaries	21,948 55	23,388 45	45,337 00	20,814 02	19,019 98	39,834 00
Total maintenance expenditures	$52,426 23	$51,780 62	$104,206 85	$55,743 61	$51,359 45	$107,103 06
Expenditures for additions and betterments	15,308 51	78,177 32	93,485 83	Included in	institution	figures.
Grand total, all expenditures	$67,734 74	$129,957 94	$197,692 68	$55,743 61	$51,359 45	$107,103 06
Institutional revenue	$10,759 08	$8 028 58	$18,787 66	$64,880 10	$57,690 98	$122,571 08
Net expenditures for maintenance	41,667 15	43,752 04	85 419 19	9,136 49 (net profit)	6,331 53 (net profit)	15,468 02 (total profit)
Population	128	124				
Gross maintenance per capita cost	$409 58	$417 59				
Net maintenance per capita cost	325 52	352 84				

Department and All Institutions.

	74th fiscal year	75th fiscal year	74th and 75th fiscal years
Expenditures for support	$2,210,435 66	$2,094,583 36	$4,305,019 02
Expenditures for salaries	2,092,506 28	1,913,241 43	4,005,747 71
Total maintenance expenditures	$4,302,941 94	$4,007,824 79	$8,310,766 73
Expenditures for additions and betterments	947,454 38	1,020,100 59	1,967,554 97
Grand total, all expenditures	$5,250,396 32	$5,027,925 38	$10,278,321 70
Institutional revenue	$1,380,109 35	$1,198,813 63	$2,578,922 98
Net expenditures for maintenance	2,922,832 59	2,809,011 16	5,731,843 75
Population	14,025	14,091	
Gross maintenance per capita cost	$306 81	$284 42	
Net maintenance per capita cost	208 40	199 35	
Trust fund receipts	$166,009 70	$150,412 04	$316,421 74

Statement of Maintenance Expenditures and Revenue, Seventy-fourth Fiscal Year.

	Population	Expenditure for— Support	Salaries	Total maintenance expenditures	Revenue	Net expenditure by state for maintenance
Department of Institutions		$8,320 74	$22,093 68	$30,414 42	$36,335 00	*$5,920 58
Agnews State Hospital	1,803	272,450 81	211,557 71	484,008 52	140,829 88	343,178 64
California School for Girls	153	58,569 96	66,799 29	125,369 25	37,236 47	88,132 78
Industrial Farm for Women	37	16,586 93	14,652 40	31,239 33	1,469 75	29,769 58
Industrial Home for Adult Blind	128	30,477 68	21,948 55	52,426 23	1,622 59	50,803 64
Industrial Home for Adult Blind—factory		34,929 59	20,814 02	55,743 61	64,880 10	*9,136 49
Mendocino State Hospital	1,166	188,092 47	160,076 98	348,169 45	103,370 62	744,798 83
Napa State Hospital	2,553	316,365 16	345,089 23	661,454 39	145,873 04	515,581 35
Norwalk State Hospital	675	101,825 67	132,602 32	234,427 99	51,990 61	182,437 38
Pacific Colony	23	6,875 19	4,430 18	11,305 37	9,529 47	1,775 90
Preston School of Industry	448	145,228 63	140,697 05	285,925 68	106,989 47	178,936 21
Sonoma State Home	1,598	253,195 53	204,254 64	457,450 17	380,309 78	77,140 39
Southern California State Hospital	2,517	326,123 09	291,565 45	617,688 54	105,480 63	512,207 91
Stockton State Hospital	2,624	348,623 88	336,947 22	685,571 10	106,801 25	578,769 85
Whittier State School	300	102,770 33	118,977 56	221,747 89	87,390 69	134,357 20
Totals	14,025	$2,210,435 66	$2,092,506 28	$4,302,941 94	$1,380,109 35	$2,922,832 59

*Credit.

Statement of Maintenance Expenditures and Revenue, Seventy-fifth Fiscal Year.

	Population	Expenditure for— Support	Salaries	Total maintenance expenditures	Revenue	Net expenditure by state for maintenance
Department of Institutions		$31,842 35	$18,032 61	$49,874 96	$9 60	$49,865 36
Agnews State Hospital	1,792	274,299 06	202,243 94	476,543 00	112,213 10	364,329 90
California School for Girls	150	48,202 23	58,655 66	106,857 89	36,091 03	70,766 86
Industrial Farm for Women		192 80	1,800 00	1,992 80	525 23	1,467 57
Industrial Home for Adult Blind	124	28,392 17	23,388 45	51,780 62	1,697 05	50,083 57
Industrial Home for Adult Blind—factory		32,339 47	19,019 98	51,359 45	57,690 98	*6,331 53
Mendocino State Hospital	1,077	161,473 94	148,029 13	309,503 07	28,060 32	281,442 75
Napa State Hospital	2,609	303,406 18	314,407 01	617,813 19	115,350 44	502,462 75
Norwalk State Hospital	855	119,991 78	128,571 91	248,563 69	33,999 04	214,564 65
Pacific Colony					11,671 21	*11,671 21
Preston School of Industry	485	150,673 22	121,685 15	272,358 37	118,132 50	154,225 87
Sonoma State Home	1,682	240,165 48	201,612 53	441,778 01	402,124 15	39,653 86
Southern California State Hospital	2,284	275,764 15	282,067 97	557,832 12	100,416 26	457,415 86
Stockton State Hospital	2,732	328,477 89	307,600 84	636,078 73	99,101 28	536,977 45
Whittier State School	301	99,362 64	86,126 25	185,488 89	81,731 44	103,757 45
Totals	14,091	$2,094,583 36	$1,913,241 43	$4,007,824 79	$1,198,813 63	$2,809,011 16

*Credit.

Statement of Maintenance Expenditures and Revenue, Seventy-fourth and Seventy-fifth Fiscal Years.

	Population	Expenditure for— Support	Salaries	Total maintenance expenditures	Revenue	Net expenditure by state for maintenance
Department of Institutions		$40,163 09	$40,126 29	$80,289 38	$36,344 60	$43,944 78
Agnews State Hospital	1,798	546,749 87	413,801 65	960,551 52	253,042 98	707,508 54
California School for Girls	151	106,772 19	125,454 95	232,227 14	73,327 50	158,899 64
Industrial Farm for Women	18	16,779 73	16,452 40	33,232 13	1,994 98	31,237 15
Industrial Home for Adult Blind	126	58,869 85	45,337 00	104,206 85	3,319 64	100,887 21
Industrial Home for Adult Blind—factory		67,269 06	39,834 00	107,103 06	122,571 08	*15,468 02
Mendocino State Hospital	1,122	349,566 41	308,106 11	657,672 52	131,430 94	526,241 58
Napa State Hospital	2,581	619,771 34	659,496 24	1,279,267 58	261,223 48	1,018,044 10
Norwalk State Hospital	765	221,817 45	261,174 23	482,991 68	85,989 65	397,002 03
Pacific Colony	12	6,875 19	4,430 18	11,305 37	21,200 68	*9,895 31
Preston School of Industry	467	295,901 85	262,382 20	558,284 05	225,121 97	333,162 08
Sonoma State Home	1,640	493,361 01	405,867 17	899,228 18	782,433 93	116,794 25
Southern California State Hospital	2,400	601,887 24	573,633 42	1,175,520 66	205,896 89	969,623 77
Stockton State Hospital	2,678	677,101 77	644,548 06	1,321,649 83	205,902 53	1,115,747 30
Whittier State School	300	202,132 97	205,103 81	407,236 78	169,122 13	238,114 65
Totals	14,058	$4,305,019 02	$4,005,747 71	$8,310,766 73	$2,578,922 98	$5,731,843 75

*Credit.

Statement of Expenditures and Revenue, Seventy-Fourth Fiscal Year.

	Population	Expenditures for —			Total, all expenditures	Revenue	Total net expenditures by state
		Support	Salaries	Additions and betterments			
Department of Institutions		$8,320 74	$22,093 68		$30,414 42	$30,335 00	*$85,920 58
Agnews State Hospital	1,803	272,450 81	211,557 71	$42,766 55	526,775 07	140,829 88	385,945 19
California School for Girls	153	58,569 96	66,799 29	35,864 86	161,234 11	37,236 47	123,997 64
Industrial Farm for Women	37	16,586 93	14,652 40	31,587 76	62,827 09	1,469 75	61,357 34
Industrial Home for Adult Blind	128	30,477 68	21,948 55	15,308 51	67,734 74	1,622 59	66,112 15
Industrial Home for Adult Blind—factory		34,929 59	20,814 02		55,743 61	64,880 10	*9,136 49
Mendocino State Hospital	1,166	188,092 47	160,076 98	69,442 95	417,612 40	103,370 62	314,241 78
Napa State Hospital	2,553	316,365 16	345,089 23	155,581 04	817,038 43	145,873 04	671,165 39
Norwalk State Hospital	675	101,825 67	132,602 32	122,658 12	357,086 11	51,960 61	305,095 50
Pacific Colony	23	6,875 19	4,430 18		11,305 37	9,529 47	1,775 90
Preston School of Industry	448	145,228 63	140,697 05	83,070 35	368,996 03	106,989 47	262,006 56
Sonoma State Home	1,598	253,195 53	204,254 64	93,287 03	550,737 20	380,309 78	170,427 42
Southern California State Hospital	2,517	326,123 09	291,565 45	60,664 51	678,353 05	105,480 63	572,872 42
Stockton State Hospital	2,024	318,623 88	336,947 22	130,996 96	816,568 06	106,801 25	709,766 81
Whittier State School	300	102,770 33	118,977 56	106,222 74	327,970 63	87,390 69	240,579 94
Totals	14,025	$2,210,435 66	$2,092,596 28	$947,454 38	$5,250,396 32	$1,380,109 35	$3,870,286 97

Statement of Expenditures and Revenue, Seventy-fifth Fiscal Year.

	Population	Expenditures for —			Total, all expenditures	Revenue	Total net expenditures by state
		Support	Salaries	Additions and betterments			
Department of Institutions		$31,842 35	$18,032 61		$49,874 96	$9 60	$49,865 36
Agnews State Hospital	1,792	274,299 06	202,243 94	$115,531 42	592,074 42	112,213 10	479,861 32
California School for Girls	150	48,202 23	58,655 66	4,287 00	111,144 89	36,091 03	75,053 86
Industrial Farm for Women		192 80	1,800 00	45 50	2,038 30	525 23	1,513 07
Industrial Home for Adult Blind	124	28,392 17	23,388 45	78,177 32	129,957 94	1,697 05	128,260 89
Industrial Home for Adult Blind—factory		32,339 47	19,019 98		51,359 45	57,690 98	*6,331 53
Mendocino State Hospital	1,077	161,473 94	148,029 13	62,550 42	372,053 49	28,060 32	343,993 17
Napa State Hospital	2,609	303,406 18	314,407 01	67,603 85	685,417 04	115,350 44	570,066 60
Norwalk State Hospital	855	119,991 78	128,571 91	187,484 75	436,048 44	33,999 04	402,049 40
Pacific Colony						11,671 21	*11,671 21
Preston School of Industry	485	150,673 22	121,685 15	35,172 46	307,530 83	118,132 50	189,398 33
Sonoma State Home	1,682	240,165 48	201,612 53	192,413 53	634,191 54	402,124 15	232,067 39
Southern California State Hospital	2,284	275,764 15	282,067 97	80,888 49	638,720 61	100,416 26	538,304 35
Stockton State Hospital	2,732	328,477 89	307,600 84	140,392 56	776,471 29	99,101 28	677,370 01
Whittier State School	301	99,362 64	86,126 25	55,553 29	241,042 18	81,731 44	159,310 74
Totals	14,091	$2,094,583 36	$1,913,241 43	$1,020,100 59	$5,027,925 38	$1,198,813 63	$3,829,111 75

*Credit.

Statement of Expenditures and Revenue, Seventy-fourth and Seventy-fifth Fiscal Years.

	Population	Expenditures for—			Total, all expenditures	Revenue	Total net expenditures by state
		Support	Salaries	Additions and betterments			
Department of Institutions		$40,163 09	$40,126 29		$80,289 38	$36,344 60	$43,944 78
Agnews State Hospital	1,798	546,749 87	413,801 65	$158,297 97	1,118,849 49	253,042 98	865,806 51
California School for Girls	151	196,772 19	125,454 95	40,151 86	272,379 00	73,327 50	199,051 50
Industrial Farm for Women	18	16,779 73	16,452 40	31,633 26	64,865 39	1,994 98	62,870 41
Industrial Home for Adult Blind	126	58,869 85	45,337 00	93,485 83	197,692 68	3,319 64	194,373 04
Industrial Home for Adult Blind—factory		67,269 06	39,834 00		107,103 06	122,571 08	*15,468 02
Mendocino State Hospital	1,122	349,566 41	308,106 11	131,993 37	789,665 89	131,430 94	658,234 95
Napa State Hospital	2,581	619,771 34	659,496 24	223,187 89	1,502,455 47	261,223 48	1,241,231 99
Norwalk State Hospital	765	221,817 45	261,174 23	310,142 87	793,134 55	85,989 65	707,144 90
Pacific Colony	12	6,875 19	4,430 18		11,305 37	21,200 68	*9,895 31
Preston School of Industry	467	295,901 85	262,382 20	118,242 81	676,526 86	225,121 97	451,404 89
Sonoma State Home	1,640	493,361 01	405,867 17	285,700 56	1,184,928 74	782,433 93	402,494 81
Southern California State Hospital	2,400	601,887 24	573,633 42	141,553 00	1,317,073 66	205,896 89	1,111,176 77
Stockton State Hospital	2,678	677,101 77	644,548 06	271,389 52	1,593,039 35	205,902 53	1,387,136 82
Whittier State School	300	202,132 97	205,103 81	161,776 03	569,012 81	169,122 13	399,890 68
Totals	14,058	$4,305,019 02	$4,005,747 71	$1,967,554 97	$10,278,321 70	$2,578,922 98	$7,699,398 72

*Credit.

TABLE NO. 1.

Movement of Patients for Year Ending June 30, 1923.

	Stockton			Napa			Agnews			Mendocino			Southern California			Norwalk			Cross totals		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
INSANE.																					
Number of patients June 30, 1922	1,556	1,092	2,648	1,446	1,209	2,655	974	815	1,789	909	350	1,259	1,347	1,198	2,545	442	330	772	6,674	4,994	11,668
Number received to June 30, 1923	487	207	694	402	235	637	291	229	520	156	47	203	338	271	609	225	137	362	1,899	1,126	3,025
Number returned escapes	127	2	129	82	4	86	14	1	15	25	1	26	89	3	92	119	1	120	456	12	468
Number under care and treatment	2,170	1,301	3,471	1,930	1,448	3,378	1,279	1,045	2,324	1,090	398	1,488	1,774	1,472	3,246	786	468	1,254	9,029	6,132	15,161
Number discharged—recovered	94	54	148	53	42	95	52	52	104	41	15	56	96	71	167	26	24	50	362	258	620
Number discharged—improved	143	26	169	91	48	139	76	33	109	61	2	63	104	66	170	99	48	147	574	223	797
Number discharged—unimproved	36	5	41	45	5	50	8	12	20	205	6	211	11	4	15	21	5	26	326	37	363
Number discharged—not insane	8		8	14	1	15	2	3	5	6		6				2	1	3	32	5	37
Number discharged by order of court		1	1	1		1				2		2							3	1	4
Number transferred to other hospitals	1	3	4	2	6	8	4		4	5	1	6	1	3	4				13	13	26
Number died	184	74	258	170	74	244	119	91	210	44	26	70	101	59	160	77	23	100	695	347	1,042
Number escaped	118	3	121	85	5	90	25	1	26	30	1	31	96	2	98	107	1	108	461	13	474
Discharged, died, escaped	584	166	750	461	181	642	286	192	478	394	51	445	409	205	614	332	102	434	2,466	897	3,363
Number of patients remaining	1,586	1,135	2,721	1,469	1,267	2,736	993	853	1,846	696	347	1,043	1,365	1,267	2,632	454	366	820	6,563	5,235	11,798
Number on parole	66	90	156	111	115	226	64	86	150	42	27	69	62	97	159	64	82	146	409	497	906
Actual number in hospital	1,520	1,045	2,565	1,358	1,152	2,510	929	767	1,696	654	320	974	1,303	1,170	2,473	390	284	674	6,154	4,738	10,892
ALCOHOLIC.																					
Number of patients June 30, 1922	5	2	7	7	2	9	6	1	7	15	6	21	10		10				43	11	54
Number received to June 30, 1923	14	5	19	8	2	10	13	6	19	13	3	16	23	2	25	5		5	76	18	94
Number returned escapes	1		1	2		2				6		6	11		11	4		4	24		24
Number under care and treatment	20	7	27	17	4	21	19	7	26	34	9	43	44	2	46	9		9	143	29	172
Number discharged—recovered													16	1	17	1		1	17	1	18
Number discharged—term expired	4		4	2		2	2		2	10	1	11	2		2				20	1	21
Number discharged—further treatment not beneficial	7	2	9	7	3	10	6	4	10	12	2	14	7		7	4		4	43	11	54
Number died				1		1				1		1							2		2
Number escaped	1		1	3		3				6	1	7	11		11	3		3	24	1	25
Discharged, died, escaped	12	2	14	13	3	16	8	4	12	29	4	33	36	1	37	8		8	106	14	120
Number of patients remaining	8	5	13	4	1	5	11	3	14	5	5	10	8	1	9	1		1	37	15	52

Number on parole	4	1	5	1	------	1	2	1	3	3	2	5	2	------	2	------	------	------	12	4	16
Actual number in hospital	4	4	8	3	1	4	9	2	11	2	3	5	6	1	7	1	------	1	25	11	36
DRUG ADDICTS.																					
Number of patients June 30, 1922	20	7	27	7	6	13	8	------	8	12	10	22	20	13	33	2	------	2	69	36	105
Number received to June 30, 1923	34	15	49	23	13	36	15	6	21	27	5	32	94	17	111	8	2	10	201	58	259
Number returned escapes	8	------	8	13	------	13	1	1	2	29	------	29	56	------	56	4	------	4	111	1	112
Number under care and treatment	62	22	84	43	19	62	24	7	31	68	15	83	170	30	200	14	2	16	381	95	476
Number discharged—recovered	------	------	------	------	------	------	------	------	------	------	------	------	24	22	46	2	2	4	26	24	50
Number discharged—term expired	8	3	11	4	5	9	3	1	4	7	3	10	3	------	3	------	------	------	25	12	37
Number discharged—further treatment not beneficial	26	7	33	18	5	23	19	3	22	25	6	31	59	2	61	8	------	8	155	23	178
Number discharged—illegal commitment	6	------	6	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	6	------	6
Number died	------	------	------	------	------	------	------	1	1	1	------	1	1	------	1	------	------	------	2	1	3
Number escaped	7	------	7	19	1	20	2	1	3	23	------	23	59	------	59	4	------	4	114	2	116
Discharged, died, escaped	47	10	57	41	11	52	24	6	30	56	9	65	146	24	170	14	2	16	328	62	390
Number of patients remaining	15	12	27	2	8	10	------	1	1	12	6	18	24	6	30	------	------	------	53	33	86
Number on parole	3	5	8	------	1	1	------	------	------	1	------	1	4	3	7	------	------	------	8	9	17
Actual number in hospital	12	7	19	2	7	9	------	1	1	11	6	17	20	3	23	------	------	------	45	24	69
VOLUNTARY.																					
Number of patients June 30, 1922	28	51	79	23	14	37	33	43	76	4	4	8	24	26	50	5	1	6	117	139	256
Number received to June 30, 1923	43	28	71	22	15	37	43	43	86	3	3	6	30	12	42	------	------	------	141	101	242
Number returned escapes	4	------	4	1	------	1	------	------	------	------	------	------	------	------	------	------	------	------	5	------	5
Number under care and treatment	75	79	154	46	29	75	76	86	162	7	7	14	54	38	92	5	1	6	263	240	503
Number discharged	27	20	47	21	15	36	37	38	75	2	1	3	26	20	46	------	------	------	113	94	207
Number died	6	3	9	3	2	5	6	5	11	------	1	1	3	1	4	------	------	------	18	12	30
Number escaped	6	------	6	2	------	2	------	------	------	------	------	------	------	------	------	------	------	------	8	------	8
Discharged, died, escaped	39	23	62	26	17	43	43	43	86	2	2	4	29	21	50	------	------	------	139	106	245
Number of patients remaining	36	56	92	20	12	32	33	43	76	5	5	10	25	17	42	5	1	6	124	134	258
Number on parole	3	8	11	1	------	1	2	2	4	------	------	------	------	------	------	------	1	1	6	11	17
Actual number in hospital	33	48	81	19	12	31	31	41	72	5	5	10	25	17	42	5	------	5	118	123	241
RECAPITULATION.																					
Insane	1,520	1,045	2,565	1,358	1,152	2,510	929	767	1,696	654	320	974	1,303	1,170	2,473	390	284	674	6,154	4,738	10,892
Alcoholics	4	4	8	3	1	4	9	2	11	2	3	5	6	1	7	1	------	1	25	11	36
Drug addicts	12	7	19	2	7	9	------	1	1	11	6	17	20	3	23	------	------	------	45	24	69
Voluntary	33	48	81	19	12	31	31	41	72	5	5	10	25	17	42	5	------	5	118	123	241
Total actual number in hospital June 30, 1923	1,569	1,104	2,673	1,382	1,172	2,554	969	811	1,780	672	334	1,006	1,354	1,191	2,545	396	284	680	6,342	4,896	11,238

TABLE NO. 1—Concluded.

Movement of Patients for the Year Ending June 30, 1924.

	Stockton			Napa			Agnews			Mendocino			Southern California			Norwalk			Cross totals		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
INSANE.																					
Number of patients June 30, 1923	1,586	1,135	2,721	1,469	1,267	2,736	993	853	1,846	696	347	1,043	1,365	1,267	2,632	454	366	820	6,563	5,235	11,798
Number admitted to June 30, 1924	599	229	828	398	283	681	253	221	474	153	75	228	299	216	515	365	318	683	2,067	1,342	3,409
Number returned escapes	123	2	125	39	4	43	28		28	18		18	95		95	85	4	89	388	10	398
Number under care and treatment	2,308	1,366	3,674	1,906	1,554	3,460	1,274	1,074	2,348	867	422	1,289	1,759	1,483	3,242	904	688	1,592	9,018	6,587	15,605
Number discharged—recovered	76	65	141	33	20	53	58	85	143	20	7	27	91	75	166	27	35	62	305	287	592
Number discharged—improved	188	31	219	99	51	150	91	48	139	10	1	11	94	42	136	118	68	186	600	241	841
Number discharged—unimproved	33	7	39	42	2	44	10	18	28	22	3	25	6	3	9	4	3	7	116	36	152
Number discharged—not insane	7	2	9	7	1	8	8	3	11	1		1	2		2	6		6	31	6	37
Number discharged by order of court		3	3																	3	3
Number transferred to other hospitals				2	1	3	1	2	3	4	6	10	67	225	292	2		2	76	234	310
Number died	213	90	303	167	113	280	100	101	201	41	25	66	104	52	156	70	40	110	695	421	1,116
Number escaped	106	3	109	57	4	61	26		26	27	1	28	89		89	97	3	100	402	11	413
Discharged, died, escaped	622	201	823	407	192	599	294	257	551	125	43	168	453	397	850	324	149	473	2,225	1,239	3,464
Number of patients remaining	1,686	1,165	2,851	1,499	1,362	2,861	980	817	1,797	742	379	1,121	1,306	1,086	2,392	580	539	1,119	6,793	5,348	12,141
Number on parole	59	85	144	102	144	246	41	42	83	43	28	71	64	102	166	60	94	154	369	495	864
Actual number in hospital	1,627	1,080	2,707	1,397	1,218	2,615	939	775	1,714	699	351	1,050	1,242	984	2,226	520	445	965	6,424	4,853	11,277
ALCOHOLIC.																					
Number of patients June 30, 1923	8	5	13	4	1	5	11	3	14	5	5	10	8	1	9	1		1	37	15	52
Number received to June 30, 1924	8	2	10	14	5	19	18	3	21	27	4	31	27	3	30	4	1	5	98	18	116
Number returned escapes	3		3	2		2				8	1	9	10		10	1	1	2	24	2	26
Number under care and treatment	19	7	26	20	6	26	29	6	35	40	10	50	45	4	49	6	2	8	159	35	194
Number discharged—recovered													10	3	13	4		4	14	3	17
Number discharged—term expired	6	3	9	3		3	5		5	4		4							18	3	21
Number discharged—further treatment not beneficial	6	3	9	6	1	7	13	4	17	11	5	16	1		1		1	1	37	14	51
Number died	1		1	1		1	1		1		1	1	6		6				9	1	10
Number escaped	3		3	1		1				8		8	11		11	1	1	2	24	1	25
Discharged, died, escaped	16	6	22	11	1	12	19	4	23	23	6	29	28	3	31	5	2	7	102	22	124
Number of patients remaining	3	1	4	9	5	14	10	2	12	17	4	21	17	1	18	1		1	57	13	70

Number on parole	------	------	------	5	1	6	------	------	------	8	2	10	9	------	9	------	------	------	22	3	25
Actual number in hospital	3	1	4	4	4	8	10	2	12	9	2	11	8	1	9	1	------	1	35	10	45
DRUG ADDICTS.																					
Number of patients June 30, 1923	15	12	27	2	8	10	------	1	1	12	6	18	24	6	30	------	------	------	53	33	86
Number received to June 30, 1924	26	11	37	15	7	22	16	4	20	20	5	25	49	15	64	10	3	13	136	45	181
Number returned escapes	3	------	3	9	1	10	5	------	5	7	2	9	50	------	50	10	------	10	84	3	87
Number under care and treatment	44	23	67	26	16	42	21	5	26	39	13	52	123	21	144	20	3	23	273	81	354
Number discharged—recovered	------	------	------	------	------	------	------	1	1	------	------	------	14	11	25	1	2	3	15	14	29
Number discharged—term expired	3	5	8	3	3	6	2	1	3	3	2	5	4	1	5	------	------	------	15	12	27
Number discharged—further treatment not beneficial	24	11	35	13	8	21	15	2	17	6	4	10	45	------	45	8	1	9	111	26	137
Number discharged—illegal commitment	3	2	5	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	3	2	5
Number died	------	------	------	1	------	1	------	------	------	1	------	1	1	------	1	1	------	1	4	------	4
Number escaped	3	------	3	8	------	8	2	------	2	14	3	17	42	------	42	10	------	10	79	3	82
Discharged, died, escaped	33	18	51	25	11	36	19	4	23	24	9	33	106	12	118	20	3	23	227	57	284
Number of patients remaining	11	5	16	1	5	6	2	1	3	15	4	19	17	9	26	------	------	------	46	24	70
Number on parole	2	1	3	------	1	1	------	------	------	3	2	5	5	6	11	------	------	------	10	10	20
Actual number in hospital	9	4	13	1	4	5	2	1	3	12	2	14	12	3	15	------	------	------	36	14	50
VOLUNTARY.																					
Number of patients June 30, 1923	36	56	92	20	12	32	33	43	76	5	5	10	25	17	42	5	1	6	124	134	258
Number received to June 30, 1924	35	30	65	22	19	41	34	46	80	5	1	6	23	16	39	------	------	------	119	112	231
Number returned escapes	8	------	8	1	------	1	------	------	------	------	------	------	------	------	------	------	------	------	9	------	9
Number under care and treatment	79	86	165	43	31	74	67	89	156	10	6	16	48	33	81	5	1	6	252	246	498
Number discharged	34	25	59	14	9	23	32	35	67	2	1	3	18	12	30	------	1	1	100	83	183
Number died	3	2	5	8	3	11	3	5	8	2	1	3	2	------	2	------	------	------	18	11	29
Number escaped	7	------	7	1	------	1	------	------	------	------	------	------	------	------	------	------	------	------	8	------	8
Discharged, died, escaped	44	27	71	23	12	45	35	40	75	4	2	6	20	12	32	------	1	1	126	94	220
Number of patients remaining	35	59	94	20	19	39	32	49	81	6	4	10	28	21	49	5	------	5	126	152	278
Number on parole	1	10	11	------	------	------	1	1	2	------	------	------	------	------	------	------	------	------	2	11	13
Actual number in hospital	34	49	83	20	19	39	31	48	79	6	4	10	28	21	49	5	------	5	124	141	265
RECAPITULATION.																					
Insane	1,627	1,080	2,707	1,397	1,218	2,615	939	775	1,714	699	351	1,050	1,242	984	2,226	520	445	965	6,424	4,853	11,277
Alcoholics	3	1	4	4	4	8	10	2	12	9	2	11	8	1	9	1	------	1	35	10	45
Drug addicts	9	4	13	1	4	5	2	1	3	12	2	14	12	3	15	------	------	------	36	14	50
Voluntary	34	49	83	20	19	39	31	48	79	6	4	10	28	21	49	5	------	5	124	141	265
Total actual number in hospital June 30, 1924	1,673	1,134	2,807	1,422	1,245	2,667	982	826	1,808	726	359	1,085	1,290	1,009	2,299	526	445	971	6,619	5,018	11,637

TABLE NO. 2.

Nativity of First Admissions for the Biennial Period Ended June 30, 1924.

Nativity	Stockton		Napa		Agnews		Mendocino		Southern California		Norwalk		Total
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	
United States	262	403	331	324	284	227	82	53	367	301	181	250	3,065
Africa				1			3					1	5
Asia [1]		1						1	1				3
Australia			1	2	1		1	2	1	1		1	10
Austria	8	16	7	5	4	3	2	4	4	6		16	75
Belgium	1		2		1								4
Canada [2]	10	9	3	14	12	12	5	2	6	9	6	8	96
Central America		2			1		1		1				5
China	14	7	6	7	5	3	1	2	1		1	2	49
Czecho-Slovakia								1			1	1	3
Cuba					1								1
Denmark	12	6	2	5	6	2	3	2	3	6	1	2	50
England	9	10	12	13	4	12	7	1	11	11	7	10	107
Europe [1]			1				1						2
Finland	6	4	1	6	2	1	5			3		2	30
France	5	6	9	11	4	6	1	1	3		3	4	53
Germany	26	23	28	19	11	19	3	3	14	12	10	9	177
Greece	8	7	2	4		1	1		3	2		5	33
Holland	2	1	2	3	1				1	3			13
Hungary	1	5	1		2	1			2	2	2	4	20
India		1	1				1				1	1	5
Ireland	22	22	21	18	11	18	9	5	11	2	5	6	150
Italy	29	33	31	27	17	21	7	9	10	8	3	14	209
Japan	15	9	4	2	5	1	1	2	7	4	5	8	63
Jugo-Slavia	10	5		1	2			1	1				20
Mexico	30	36	8	14	7	7	3	2	30	38	23	47	245
Norway	3	2	4	2	2	1	1	5	3	1	1	1	26
Philippine Islands	7	7	4	3	1		3	2	1			1	29
Poland	6	6	3	1	2	1	3		1	1		2	26
Porto Rico		1				2				1			4
Portugal	11	14	7	5	8	9	1	1			3	1	60
Roumania			1	4		2	1		2	2	3		15
Russia	14	13	7	9	4	3	3	3	11	9	5	13	94
Scotland	3	3	3	2	4	3	2	2	2		1	3	28
South America		2	1	3	1				3	1			11
Spain	3	6	3	7	2	5	1	2	2	2	3		36
Sweden	8	12	4	8	8	4	1	4	9	4	6	2	70
Switzerland	5	9	2	7	7	8	1	1	2	2		3	47
Turkey in Asia		3							1				4
Turkey in Europe	3					1			2				6
Wales	2			1	1								4
West Indies [3]	1	1						3					5
Other countries	4	9	3	1		3	2		7	1	1	4	35
Unascertained	23	17	2	5	2	1		2	19	8	9	7	95
Totals	563	711	517	534	423	377	156	116	542	440	281	428	5,088

[1]Not otherwise specified.
[2]Includes Newfoundland.
[3]Except Cuba and Porto Rico.

TABLE NO. 3.

Citizenship of First Admissions for the Biennial Period Ended June 30, 1924.

	Stockton		Napa		Agnews		Mendocino		Southern California		Norwalk		Total
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	
Citizens by birth	262	403	330	326	284	231	83	55	348	301	181	250	3,054
Citizens by naturalization	55	74	82	75	19	55	44	13			9	2	428
Aliens	183	159	88	85	35	63	19	33			25	54	744
Citizenship unascertained	63	75	17	48	85	28	10	15	194	139	66	122	862
Totals	563	711	517	534	423	377	156	116	542	440	281	428	5,088

TABLE NO. 4.

Psychoses of First Admissions for the Biennial Period Ended June 30, 1924.

Psychoses	Stockton		Napa		Agnews		Mendocino		Southern California		Norwalk		Total
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	
Traumatic psychoses	5	5	2	3	2	1				5			23
Senile psychoses	55	61	50	36	44	43	8	7	42	36	19	13	414
Psychoses with cerebral arteriosclerosis	56	89	41	33	26	36	15	11	16	5	11	23	362
General paralysis	61	62	69	60	62	41	25	13	82	42	63	101	681
Psychoses with cerebral syphilis	9	5		6	2	3	7	1		1		4	38
Psychoses with Huntington's chorea	1	2	1		2								6
Psychoses with brain tumor	1	1	2										4
Psychoses with other brain or nervous diseases	5	1	3		1	1			2			1	14
Alcoholic psychoses	50	52	34	23	11	9	12	14	21	22	4	3	255
Psychoses due to drugs and other exogenous toxins	7	6	2	1		3			3				22
Psychoses with pellagra						1							1
Psychoses with other somatic diseases	27	34	10	4	10	10	2	2	12	8	2		121
Manic-depressive psychoses	60	74	111	168	53	41	21	15	164	146	56	84	993
Involution melancholia	11	27	8	2	25	29	1		7	4	8	5	127
Dementia praecox	94	149	126	117	115	97	37	36	128	112	96	157	1,264
Paranoia and paranoid conditions	1		12	19	11	7	3		1	1	5	3	63
Epileptic psychoses	16	24	11	7	13	8	5	2	9	18	4	12	129
Psychoneuroses and neuroses	2	6	3	6	16	3	3	3	6	2	1		51
Psychoses with psychopathic personality	12	9	2	10	4	1	2	4	5	2	2	4	57
Psychoses with mental deficiency	22	32	4	12	16	6	5	7	39	34	1	3	181
Undiagnosed psychoses	50	66	7	11	4	19	1		5	2	3	8	176
Not insane:													
a. Epilepsy without psychoses	4			1	1	1	1						8
b. Alcoholism without psychoses			3	1									4
c. Drug addiction without psychoses	1	1			1		2						5
d. Psychopathic personality without psychoses		2	7	5	3	3	1					3	24
e. Mental deficiency without psychoses	6		3	1	1	9	3	1			3	1	28
f. Others	7	3	6	8		5	2				3	3	37
Totals	563	711	517	534	423	377	156	116	542	440	281	428	5,088

TABLE NO. 5.

Age of First Admissions for the Biennial Period Ended June 30, 1924.

Age	Stockton		Napa		Agnews		Mendocino		Southern California		Norwalk		Total
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	
Under 15 years	2	2	1	1	1	4	.....	.....	.....	1	.....	.....	12
15-19 years	16	25	21	17	23	13	2	3	23	16	5	33	197
20-24 years	49	63	55	67	40	21	10	15	46	53	27	40	486
25-29 years	53	75	53	66	38	39	21	11	58	40	22	46	522
30-34 years	59	59	54	66	43	31	35	15	66	61	32	53	574
35-39 years	81	86	71	66	48	44	15	16	69	64	42	65	667
40-44 years	49	79	57	48	46	34	14	13	75	51	32	57	555
45-49 years	55	85	35	46	34	33	15	8	66	37	31	35	480
50-54 years	37	48	38	30	33	26	10	11	39	37	23	29	361
55-59 years	31	36	24	33	26	29	12	6	25	20	18	22	282
60-64 years	26	36	30	26	18	19	5	5	23	18	23	11	240
65-69 years	14	26	21	31	18	26	5	4	15	10	11	12	193
70 years and over	60	63	56	30	51	58	11	9	28	24	7	13	410
Unascertained	31	28	1	7	4	.....	1	.....	9	8	8	12	109
Totals	563	711	517	534	423	377	156	116	542	440	281	428	5,088

TABLE NO. 6.

Degree of Education of First Admissions for the Biennial Period Ended June 30, 1924.

Education	Stockton		Napa		Agnews		Mendocino		Southern California		Norwalk		Total
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	
Illiterate	43	60	39	38	24	31	7	7	25	23	13	17	327
Reads and writes	93	59	22	27	22	20	59	36	49	27	17	27	458
Common school	319	486	353	372	275	258	64	51	344	252	167	257	3,198
High school	25	41	82	80	56	35	11	4	45	58	33	53	523
College	13	13	10	6	19	20	5	1	17	25	7	15	151
Unascertained	70	52	11	11	27	13	10	17	62	55	44	59	431
Totals	563	711	517	534	423	377	156	116	542	440	281	428	5,088

TABLE NO. 7.

Environment of First Admissions for the Biennial Period Ended June 30, 1924.

Environment	Stockton		Napa		Agnews		Mendocino		Southern California		Norwalk		Total
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	
Urban	263	285	411	446	281	269	121	83	439	321	258	350	3,527
Rural	201	287	106	70	85	97	35	33	102	104	13	28	1,161
Unascertained	99	139	.....	18	57	11	.....	.....	1	15	10	50	400
Totals	563	711	517	534	423	377	156	116	542	440	281	428	5,088

TABLE NO. 8.

Economic Condition of First Admissions for the Biennial Period Ended June 30, 1924.

Economic condition	Stockton		Napa		Agnews		Mendocino		Southern California		Norwalk		Total
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	
Dependent	65	85	164	30	186	186	103	105	13	33	37	65	1,072
Marginal	427	533	167	302	134	170	------	1	349	329	174	183	2,769
Comfortable	6	4	177	182	57	19	53	10	180	71	44	98	901
Unascertained	65	89	9	20	46	2	------	------	------	7	26	82	346
Totals	563	711	517	534	423	377	156	116	542	440	281	428	5,088

TABLE NO. 9.

Use of Alcohol by First Admissions for the Biennial Period Ended June 30, 1924.

Alcoholic addiction	Stockton		Napa		Agnews		Mendocino		Southern California		Norwalk		Total
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	
Abstinent	131	206	214	195	216	220	32	27	229	235	153	221	2,079
Temperate	280	390	204	248	93	112	83	57	110	59	55	104	1,795
Intemperate	67	59	90	61	46	27	31	21	64	55	38	26	585
Unascertained	85	56	9	30	68	18	10	11	139	91	35	77	629
Totals	563	711	517	534	423	377	156	116	542	440	281	428	5,088

TABLE NO. 10.

Marital Condition of First Admissions for the Biennial Period Ended June 30, 1924.

Marital condition	Stockton		Napa		Agnews		Mendlcino		Southern California		Norwalk		Total
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	
Single	250	320	228	263	165	124	96	62	227	182	90	147	2,154
Married	160	224	188	183	186	156	36	25	183	170	130	198	1,839
Widowed	56	60	65	58	50	53	12	11	48	31	25	27	496
Separated	9	16	8	6	2	7	4	6	20	8	5	11	102
Divorced	21	41	21	21	14	27	6	12	41	29	15	11	259
Unascertained	67	50	7	3	6	10	2	------	23	20	16	34	238
Totals	563	711	517	534	423	377	156	116	542	440	281	428	5,088

TABLE NO. 11.

Psychoses of Readmissions for the Biennial Period Ended June 30, 1924.

Psychoses	Stockton		Napa		Agnews		Mendocino		Southern California		Norwalk		Total
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	
Traumatic psychoses	1	1							1	3			6
Senile psychoses	4	2		1	2	2	1	1	1	1	3	1	19
Psychoses with cerebral arteriosclerosis	14	13	5	1	6	1	2		1	1		2	46
General paralysis	1	7	4	4	6	3	5	1	1		14	8	54
Psychoses with cerebral syphilis				1	1	2							4
Psychoses with Huntington's chorea		1											1
Psychoses with brain tumor													
Psychoses with other brain or nervous diseases			2		2		1		1	1	1		8
Alcoholic psychoses	13	12	16	4	3	5	1	5	3		3		65
Psychoses due to drugs and other exogenous toxins	1	1	1		1	2		1	1				8
Psychoses with pellagra													
Psychoses with other somatic diseases	1	2	2						1				6
Manic-depressive psychoses	26	42	47	61	72	65	21	11	43	63	20	44	515
Involution melancholia					6	4			1	1		3	15
Dementia praecox	48	41	47	30	49	55	7	12	29	20	30	60	428
Paranoia and paranoid conditions			8	4	4	2	2			1		2	23
Epileptic psychoses	2	4	7	4	3	7	1		5	5	3	2	43
Psychoneuroses and neuroses	1	2	1	2	5	8							19
Psychoses with psychopathic personality	5	4	2	3	6	6	1				2	1	30
Psychoses with mental deficiency	7	6	1	7	5	4	4	3	7	5		1	50
Undiagnosed psychoses	5	13	2		3	2			1		2		28
Without psychosis	2	1	4	1	7	3	2	2			1		23
Totals	131	152	149	123	181	171	48	36	96	101	79	124	1,391

TABLE NO. 12.

Causes of Death of Patients During the Biennial Period Ended June 30, 1924.

Cause of Death	Stockton		Napa		Agnews		Mendocino		Southern California		Norwalk		Total
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	
General diseases:													
Typhoid fever									1				1
Malaria													
Smallpox													
Measles				1									1
Scarlet fever										1			1
Diphtheria			1										1
Influenza					1				2	1			4
Dysentery											1		1
Erysipelas	2		1		3								6
Septicaemia		3	1	1	4		4			1			14
Pellagra					2	1							3
Acute articular rheumatism					1								1
Tuberculosis of lungs	41	45	15	12	23	17	6	6	23	14	2	1	205
Other forms of tuberculosis		6	1		1	1	1		1				11
Syphilis (non-nervous forms)		2											2
Cancer	8	5	6	4	3	3	4		4	5		1	43
Tumor (non-cancerous)			1										1
Diabetes	1				1								2
Other general diseases	8		3	1	1		1					1	15
Nervous system:													
Cerebro-spinal meningitis		1											1
Diseases of spinal cord					18								18
Apoplexy (cerebral hemorrhage)	25	22	18	16	53	39	6		13	9	1	2	204
General paralysis of insane	47	68	52	54		41	9	15	65	46	44	49	490
Cerebro-spinal syphilis	6	1	1	1						1		2	12
Exhaustion from other mental diseases	7	14	5	25	15	5					34	41	146
Brain tumor	1		2		1								4
Other diseases of brain	3	1		2	1	4				1			12
Epilepsy	7	5	4	17	5	6	1	2	4	5	5	1	62
Chorea				1	1	2							4
Other diseases of nervous system				1						1			2
Circulatory system:													
Pericarditis						1							1
Endocarditis and myocarditis	10	4	82	88	14	9	8	4	32	48	1	1	301
Angina pectoris					1						1		2
Other diseases of heart	6	6	1	4	9	19	5	5			1	1	57

TABLE No. 12—Continued.

Causes of Death of Patients During the Biennial Period Ended June 30, 1924.

Psychoses	Stockton		Napa		Agnews		Mendocino		Southern California		Norwalk		Total
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	
Circulatory system—Continued.													
Arteriosclerosis	44	90	18	9	37	29	6	18		1	6	6	264
Other diseases of the arteries			2					2	2	6			12
Other diseases of circulatory system		1						1	2	2			6
Respiratory system:													
Bronchitis		1											1
Bronchopneumonia	10	1	11	6	3	6	3	1	3	5			49
Lobar pneumonia	8	4	10	9	4	1	6	9		2	1	2	56
Pleurisy		1							1				2
Gangrene of lungs													
Other diseases of respiratory system			1	2			2						5
Digestive system:													
Ulcer of stomach	1			1		1			1				4
Other diseases of stomach (cancer excepted)	1		1	2		2			1				7
Diarrhea and enteritis			3	13	6	2							24
Appendicitis	1												1
Intestinal obstruction			1	3		2			4	1		1	12
Other diseases of intestines	2	1	2		1			1					7
Cirrhosis of liver	1		1	1				1					4
Other diseases of liver				1									1
Other diseases of digestive system (cancer and tuberculosis excepted)										1			1
Genito-urinary system:													
Acute nephritis	1	2	1	1				1		1			7
Chronic nephritis	15	19	2	5	9	12	4	1	3	2			72
Other diseases of kidneys and annexa													
Diseases of bladder													
Diseases of genital organs					1	1							2
Other diseases of genito-urinary system													
Diseases of the skin:													
Gangrene		1					2		1				4
Other diseases of the skin										1			1
Diseases of bones and locomotor system (tuberculosis and rheumatism excepted)													
Violence:													
Suicide		4	2	5	1	4	2	1		1		1	21
Fractures													
Dislocations													
Homicide										1			1
Other external violence	2			1	1	1	1	1		1	3		11
Total	258	308	249	287	221	209	71	69	163	158	100	110	2,203

TABLE NO. 13.

Duration of Hospital Life of Patients Dying During the Biennial Period Ended June 30, 1924.

Duration of hospital life	Stockton		Napa		Agnews		Mendocino		Southern California		Norwalk		Total
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	
Less than 1 month	44	46	35	30	48	30	7	3	18	15	31	31	338
1-3 months	42	46	22	28	35	37	5	3	17	19	17	27	298
4-7 months	26	29	22	37	18	26	3	9	13	9	15	12	219
8-12 months	11	23	29	28	16	10	5	4	12	11	12	5	166
1-2 years	54	61	23	30	39	42	12	14	51	32	12	24	394
3-4 years	21	22	31	37	15	14	7	8	12	20	8	3	198
5-6 years	15	20	11	15	10	7	4	4	9	19	2	3	119
7-8 years	12	10	5	16	7	11	------	4	7	9	------	1	82
9-10 years	3	12	6	6	8	7	6	1	7	4	------	1	61
11-12 years	3	6	8	6	5	5	2	------	3	7	1	1	47
13-14 years	3	5	8	6	2	1	3	3	2	1	2	------	36
15-19 years	9	10	15	16	7	3	5	8	5	6	------	2	86
20 years and over	15	18	34	32	11	16	12	8	7	6	------	------	159
Totals	258	308	249	287	221	209	71	69	163	158	100	110	2,203

SONOMA STATE HOME.

TABLE NO. 1.

Population Report, July 1, 1922, to June 30, 1923.

	Male	Female	Total
Population July 1, 1922	895	913	1,808
Admissions	180	119	299
Returned elopers	26	7	33
Total receiving care and treatment	1,101	1,039	2,140
Number out:			
Improved	21	16	37
Unimproved	20	4	24
Transfer to other hospitals	5	4	9
Died	27	37	64
Eloped	55	12	67
Totals	128	73	201
Population June 30, 1923	973	966	1,939
On leave	142	176	318
Actual population end of year	831	790	1,621

TABLE NO. 2.

Population Report, July 1, 1923, to June 30, 1924.

	Male	Female	Total
Population July 1, 1923	973	966	1,939
Admissions	160	150	310
Returned elopers	58	16	74
Total receiving care and treatment	1,191	1,132	2,323
Number out:			
Improved	2	7	9
Unimproved	8	2	10
Transfer to other hospitals	6	5	11
Died	32	31	63
Eloped	62	18	80
Totals	110	63	173
Population June 30, 1924	1,081	1,069	2,150
On leave	188	204	392
Actual population end of year	893	865	1,758

TABLE NO. 3.

Mental Status of Admissions for the Biennial Period Ending June 30, 1924.

Mental status	June 30, 1923	June 30, 1924
Idiot	33	32
Imbecile	78	90
Moron	157	120
Not feeble-minded (exclude epileptics)	---	32
Epileptics	---	8
Under observation	31	28
Totals	299	310

TABLE NO. 4.

Nativity of Admissions for the Biennial Period Ending June 30, 1924.

Nativity	June 30, 1923	June 30, 1924
United States	269	272
Australia	1	---
Austria	---	1
*Canada	---	1
Central America	---	1
China	1	---
England	2	2
Finland	---	1
France	---	2
Holland	1	---
Italy	4	3
Mexico	5	4
Portugal	2	2
Russia	1	---
Scotland	1	1
Spain	1	1
Other countries	7	9
Unascertained	4	10
Totals	299	310

*Includes Newfoundland.

TABLE NO. 5.

Showing Age at Time of First Admission of Patients for the Biennial Period Ending June 30, 1924.

Age	June 30, 1923	June 30, 1924
Under 10 years	44	44
10 to 14 years	58	85
15 to 19 years	112	93
20 to 24 years	40	28
25 to 29 years	14	13
30 to 34 years	3	8
35 to 39 years	6	4
40 to 44 years	4	5
45 to 49 years	3	3
50 to 54 years	---	2
55 to 59 years	2	2
60 years and over	3	0
Unascertained	6	5
Totals	295	292

TABLE NO. 6.

Showing Marital Condition of First Admissions for the Biennial Period Ending June 30, 1924.

Marital condition	June 30, 1923	June 30, 1924
Single	279	279
Married	14	11
Widowed	1	1
Divorced	1	1
Separated	---	---
Unascertained	---	---
Totals	295	292

TABLE NO. 7.

Showing Environment of First Admissions for the Biennial Period Ending June 30, 1924.

Environment	June 30, 1923	June 30, 1924
Urban	199	230
Rural	64	49
Unascertained	32	13
Totals	295	292

TABLE NO. 8.

Economic Condition of Families of First Admissions for the Biennial Period Ending June 30, 1924.

Economic condition	June 30, 1923	June 30, 1924
Dependent	219	195
Marginal	17	26
Comfortable	49	67
Unascertained	10	4
Totals	295	292

TABLE NO. 9.

Discharges with Reference to Age for the Biennial Period Ending June 30, 1924.

Age	June 30, 1923	June 30, 1924
Under 10 years	3	1
10 to 14 years	9	1
15 to 19 years	24	13
20 to 24 years	22	7
25 to 29 years	3	4
30 to 34 years	1	2
35 to 39 years	1	1
40 to 44 years	2	---
45 to 49 years	1	---
50 to 54 years	---	1
55 to 59 years	---	---
60 years and over	1	---
Unascertained	3	---
Totals	70	30

TABLE NO. 10.

Deaths with Reference to Age for the Biennial Period Ending June 30, 1924.

Age	June 30, 1923	June 30, 1924
Under 10 years	13	13
10 to 14 years	8	11
15 to 19 years	10	14
20 to 24 years	9	11
25 to 29 years	3	3
30 to 34 years	6	1
35 to 39 years	3	2
40 to 44 years	4	4
45 to 49 years	2	2
50 to 54 years	3	1
55 to 59 years	---	---
60 years and over	3	1
Unascertained	---	---
Totals	64	63

TABLE NO. 11.

Causes of Death for the Biennial Period Ending June 30, 1924.

Causes of death	Year ending June 30, 1923	Year ending June 30, 1924
General diseases:		
Measles	---	10
Diphtheria	1	---
Tuberculosis of lungs	17	7
Other forms of tuberculosis	1	1
Syphilis (non-nervous forms)	1	1
Nervous system:		
Cerebro-spinal meningitis	3	---
Diseases of spinal cord	---	1
Apoplexy (cerebral hemorrhage)	---	2
General paralysis of insane	1	1
Other diseases of brain	1	---
Epilepsy	15	19
Other diseases of nervous system	---	2
Circulatory system:		
Endocarditis and myocarditis	4	2
Other diseases of the heart	2	4
Respiratory system:		
Bronchopneumonia	4	4
Lobar pneumonia	3	2
Other diseases of the respiratory system	3	1
Digestive system:		
Diseases of intestines	--	1
Other diseases of digestive system (cancer and tuberculosis excepted)	1	2
Genito-urinary system:		
Acute nephritis	2	---
Chronic nephritis	---	1
Other diseases of kidneys and annexa	1	---
Other diseases of genito-urinary system	1	---
Puerperal diseases	1	---
Malformations	1	---
Violence:		
Suicide	---	1
Accidental traumatism	---	1
Other external violence	1	---
Total	64	63

TABLE NO. 12.

Showing Counties from Which the Patients were Received During the Biennial Period Ending June 30, 1924.

Counties	June 30, 1923	June 30, 1924
Alameda	54	60
Butte	3	2
Calaveras	---	1
Colusa	---	2
Contra Costa	3	6
El Dorado	1	---
Fresno	12	11
Glenn	3	---
Humboldt	5	2
Imperial	---	5
Inyo	1	---
Kern	5	3
Kings	1	1
Lassen	1	1
Los Angeles	54	41
Madera	4	1
Marin	4	1
Mendocino	2	1
Merced	---	1
Monterey	1	4
Napa	3	1
Nevada	1	1
Orange	2	3
Placer	2	5
Plumas	1	1
Riverside	5	5
Sacramento	7	9
San Benito	---	1
San Bernardino	4	7
San Diego	18	9
San Francisco	41	57
San Joaquin	8	3
San Luis Obispo	2	1
San Mateo	1	3
Santa Barbara	11	22
Santa Clara	14	16
Santa Cruz	3	---
Shasta	---	1
Siskiyou	2	1
Solano	2	1
Sonoma	11	6
Stanislaus	1	1
Sutter	---	2
Tulare	1	3
Tuolumne	1	3
Ventura	1	4
Yolo	3	1
Totals	299	310

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BIENNIAL REPORT

OF THE

SURVEYOR GENERAL

OF THE

STATE OF CALIFORNIA

FOR THE TERM ENDING AUGUST 1, 1924

CALIFORNIA STATE PRINTING OFFICE
FRANK J. SMITH, Superintendent
SACRAMENTO, 1924

34874

BIENNIAL REPORT OF THE SURVEYOR GENERAL.

STATE OF CALIFORNIA,
OFFICE OF THE SURVEYOR GENERAL.
SACRAMENTO, September 29, 1924.

To His Excellency, F. W. RICHARDSON,
Governor of the State of California.

SIR: I have the honor to herewith submit a report covering the work of this office for the term ending August 1, 1924.

DURING THE PAST BIENNIUM:

Fees and royalties amounting to $12,847 were collected by the Surveyor General and Register of the State Land Office, as provided by sections 501 and 3574 of the Political Code and chapter 303, Statutes of California, 1921, and paid into the state treasury and placed to the credit of the general fund.

56,939 acres of state school lands were leased for a rental of $8,010 under the provisions of chapter 493, Statutes of California, 1917, recommended by me, 94 leases being executed. Prior to that date, no revenue was received through the rental of school lands.

20,789 acres of lieu school lands were sold through the sale of scrip purchased under the provisions of section 3408*d* of the Political Code for the sum of $137,456, an average of $6.61 per acre. Prior to the enactment of section 3408*d*, recommended by me, the state received $1.25 an acre.

Public auction sales of school land were held under the provisions of chapter 207, Statutes of California, 1919, in the counties of Shasta, Riverside, San Bernardino, San Diego, Imperial, Yolo, Solano, Napa, Sonoma, Lassen, Modoc, Del Norte, Humboldt, Mendocino, Sierra, Nevada, Plumas and Alpine, 67,324 acres being sold for $202,807, an average of $3.01 an acre. Prior to the enactment of legislation recommended by me, the state received $1.25 an acre for such land.

40 acres of state school land were sold under the provisions of chapter 208, Statutes of California, 1919, for $10,000, being $250 an acre, and 197 acres were sold for $985, being $5 an acre. Prior to the enactment of legislation recommended by me, the state received $1.25 an acre.

251.21 acres of sovereign lands in the bed of Clear Lake were sold under the provisions of chapter 142, Statutes of California, 1923, for $7,536.30, being $30 an acre. Prior to the enactment of chapter 142, recommended by me, the state received $2.50 an acre.

669 applications to purchase 93,480 acres of state lands were filed.

1392 reports of county treasurers, made under the provisions of section 3422 of the Political Code, showing the receipt of $155,686 paid for state lands, were received and entered on the records of this office, as provided in section 3423 of the Political Code.

3451 acres of lake lands were leased for a rental of $8,628 under the provisions of chapter 612, Statutes of California, 1911, recommended by me, 11 leases being executed. Prior to that date, the state received no revenue from that class of lands.

4730 acres of submerged lands were leased under the provisions of chapter 829, Statutes of California, 1921, for a rental of $946, one lease being executed.

56 lists and patents conveying 62,080 acres of land from the United States to the state were recorded in this office, as provided in section 3405 of the Political Code.

621 certificates of purchase for 89,114 acres of state lands were issued under the provisions of section 3514 of the Political Code.

481 patents for 72,295 acres of state lands were issued under the provisions of section 3519 of the Political Code.

165 land surveyors' licenses were issued under the provisions of chapter 247, Statutes of California, 1907.

County registrars of land titles in sixteen counties in the state operating under "An act to amend an act entitled 'An act for the certification of land titles and the simplification of the transfer of real estate,' approved March 17, 1897," Statutes of California, 1915, page 1932, reported to this office the number of registrations and of certificates of title issued, which reports were embodied in reports made by this office under the provisions of chapter 800, Statutes of California, 1917.

49 duplicate certificates of purchase were issued under the provisions of section 3518 of the Political Code.

95 certificates of status of state lands, 164 certified copies of records and 23 certified copies of records of patents were issued.

230 indemnity state selections were made under the provisions of section 3398 of the Political Code.

141 certified lists of lands sold by the state were issued under the provisions of section 3659 of the Political Code.

65 statements of delinquencies were issued as provided by section 3546 of the Political Code.

Surveys, maps and tablings made under the provisions of chapter 612, Statutes of California, 1911, amounting to 10 in number, were checked.

Surveys, maps and tablings made under the provisions of chapter 490, Statutes of California, 1915, amounting to 2 in number, were checked.

Surveys of 65 camp sites in section 16, T. 1 N., R. 10 W., S. B. M., were made for the purpose of leasing under the provisions of chapter 493, Statutes of California, 1917.

An extensive study of the prevalence of oil upon the beaches along the coast of California was made, as provided by Assembly Concurrent Resolution No. 23, chapter 82, Statutes of California, 1923, and a report is in course of preparation.

An investigation to determine what public lands of the State of California in national forests are more valuable for timber than for any other purpose and subject to exchange for United States lands, as provided in chapter 229, Statutes of California, 1923, has been made and the acreage is estimated at 50,000.

The lands are scattered in 22 counties and an exchange thereof for United States lands in a compact body, as permitted by an act of congress of March 20, 1922 (Public No. 173), would result in a gain to the state of at least $250,000, the reason therefor being that the state lands being scattered, have not the value that the same number of acres in a compact body would have.

The scattered state lands would have as great a value to the United States as the United States lands exchanged, for the reason that the United States could consolidate the scattered state lands with the United States lands thereby making a compact body of United States lands.

The cost of making the exchange is estimated at $25,000, the United States requiring the state to advertise the state lands together with the United States lands in the counties in which the lands are located, also requiring the state to furnish abstracts of title covering the 50,000 acres, and requiring the state to pay $624 fees.

If the provisions of chapter 229 are to be carried out, provisions for the expense must be made.

Ten thousand letters have been written during the two years.

Classification of 556,527 acres of state land was made under the provisions of chapter 303, Statutes of California, 1921.

24 lists of persons licensed as land surveyors were transmitted to each of the 58 county recorders in the state as provided by section 4 of chapter 247, Statutes of California, 1907, a total of 1392 lists being transmitted.

Tabulated statements follow:

GENERAL OFFICE BUSINESS.

Amount of fees and royalties collected by Surveyor General and Register of the State Land Office from August 1, 1922, to August 1, 1924, and paid into the state treasury, to the credit of the general fund, or to the Secretary of State.

Month	Paid into State Treasury	Paid to Secretary of State
1922—August	$184 00	$9 00
September	362 50	71 00
October	782 02	37 00
November	495 94	32 00
December	252 70	33 00
1923—January	382 65	11 00
February	275 84	22 00
March	410 84	25 00
April	301 45	26 00
May	1,216 58	53 00
June	288 38	28 00
July	222 83	23 00
August	515 51	37 00
September	245 44	14 00
October	314 25	18 00
November	376 75	28 00
December	387 47	33 00
1924—January	703 46	27 00
February	392 39	19 00
March	1,052 88	9 00
April	885 94	27 00
May	1,489 16	38 00
June	793 68	29 00
July	544 94	38 00
Totals	$12,847 60	$687 00

Amount of annual rentals received by the Surveyor General for the lease of state lands pursuant to the provisions of chapter 493, Statutes of California, 1917, from August 1, 1922, to August 1, 1924, and paid into the state treasury to the credit of the school land fund.

1922—August	$189 00
September	224 27
October	219 20
November	553 43
December	186 40
1923—January	967 20
February	116 80
March	102 00
April	185 50
May	149 65
June	361 40
July	883 73
August	146 85
September	411 02
October	190 00
November	428 63
December	320 80
1924—January	960 00
February	39 20
March	223 60
April	45 00
May	270 00
June	62 00
July	773 85
Total	$8,009 53

STATE SCRIP.

Amount of money received by the Surveyor General from the sale of scrip under the provisions of section 3408*d* of the Political Code, from August 1, 1922, to August 1, 1924, and paid into the state treasury to the credit of the school land fund.

1922—November	$25,836 35
1923—January	15,894 86
May	37 77
July	3 56
August	25,880 50
September	8,281 46
October	7,395 44
November	3,745 37
December	3,581 57
1924—January	2,725 19
February	4,807 22
March	14,505 74
April	8,802 37
May	3,803 23
June	5,313 69
July	6,841 92
Total	$137,456 24

Amount of money received by the Surveyor General under the provisions of chapter 303, Statutes of California, 1921, for application fees for permits, permit fees and annual rentals and paid into the State Treasury to the credit of the school fund.

Application fees for permits	$10 00
Permit fees	400 00
Annual rentals	320 00
Total	$730 00

FINANCIAL RECAPITULATION.

Amount of fees and royalties collected by Surveyor General and Register of the State Land Office	$12,847 60
Amount of fees collected by Register of State Land Office for Secretary of State	687 00
Amount of annual rentals received by Surveyor General for the lease of state land under chapter 493, Statutes of California, 1917	8,009 53
Amount of money received by Surveyor General from the sale of scrip under section 3408d of the Political Code	137,456 24
Amount of money received by the Surveyor General under the provisions of chapter 303, Statutes of California, 1921, for application fees for permits, permit fees and annual rentals	730 00
Total	$159,730 37

PUBLIC AUCTION SALES OF SCHOOL LANDS.

State school lands were sold at public auction under the provisions of chapter 207, Statutes of California, 1919, between August 1, 1922, and August 1, 1924, as follows:

County	Date	Acres	Amount
Shasta	Oct. 30, 1923	1,113	$8,320 00
Riverside	Jan. 23, 1924	8,018	31,000 00
San Bernardino	Mar. 6, 1924	20,867	51,617 00
San Diego	April 22, 1924	4,403	14,845 00
Imperial	April 24, 1924	4,930	16,210 00
Yolo	May 21, 1924	200	400 00
Solano	May 22, 1924	160	440 00
Napa	May 27, 1924	980	2,215 00
Sonoma	May 28, 1924	670	1,550 00
Lassen	June 10, 1924	16,519	54,409 00
Modoc	June 13, 1924	1,906	4,579 00
Del Norte	June 19, 1924	320	1,400 00
Humboldt	June 23, 1924	2,208	4,275 00
Mendocino	June 27, 1924	3,058	6,722 00
Sierra	July 11, 1924	240	460 00
Nevada	July 15, 1924	1,138	2,376 00
Alpine	July 29, 1924	594	1,989 00
Totals		67,324	$202,807 00

SALES OF SCHOOL LANDS TO ACTUAL SETTLERS.

State school lands were sold to actual settlers under the provisions of chapter 208, Statutes of California, 1919, as follows:

County	Date	Acres	Amount
Mendocino	Feb. 5, 1923	197.60	$988.00
San Bernardino	Dec. 24, 1923	40.00	10,000.00
Totals		237.60	$10,988.00

SALES OF SOVEREIGN LANDS.

State sovereign lands were sold under the provisions of chapter 142, Statutes of California, 1923, as follows:

County	Date	Acres	Amount
Lake	1923	41.04	$1,231.20
Lake	1924	210.17	6,305.10
Totals		251.21	$7,536.30

APPLICATIONS TO PURCHASE STATE LANDS.

From August 1, 1922, to August 1, 1924, applications to purchase state lands were received and filed as follows:

School lands, lake lands, swamp and overflowed lands and sovereign lands	Number of applications	Acres
Eureka Land District, school lands	17	2,717.49
Imperial Land District, school lands	95	10,851.58
Independence Land District, school lands	46	10,045.94
Los Angeles Land District, school lands	291	32,254.38
Sacramento Land District, school lands	55	6,658.73
San Francisco Land District, school lands	72	7,370.20
Susanville Land District, school lands	68	21,314.52
Visalia Land District, school lands	8	760.62
Lake lands	1	19.44
Swamp and overflowed lands	*9	1,035.85
Sovereign lands	7	251.21
Totals	669	93,479.96

STATE LAND PAYMENTS.

Amounts of principal, interest and penalties received for the state by the county treasurers, on account of sales of school and sovereign lands, from August 1, 1922, to August 1, 1924.

Counties	Principal	Interest	Total	Penalties
Alameda				
Alpine	$178 90	$386 16	$865 06	
Amador		25 10	25 10	
Butte	1,296 00	240 46	1,536 46	
Calaveras	334 80	129 60	464 40	$1 08
Colusa		161 62	161 62	
Contra Costa				
Del Norte	140 00	40 11	180 11	
El Dorado	40 80	219 35	260 15	
Fresno	602 03	1,739 52	2,341 55	57 59
Glenn		112 72	112 72	45
Humboldt	2,065 16	81 92	2,147 08	
Imperial	3,720 89	12,134 07	15,854 96	1,155 73
Inyo		1,279 96	1,279 96	46 80
Kern	3,309 69	5,060 71	8,370 40	173 42
Kings				
Lake	936 93	515 43	1,452 36	
Lassen	20,920 89	2,740 47	23,661 36	
Los Angeles	742 90	586 80	1,329 70	16 09
Madera	40 00	542 72	582 72	11 01
Marin				
Mariposa	528 00	237 36	765 36	1 73
Mendocino	3,381 09	816 21	4,197 30	
Merced	480 00	124 48	604 48	
Modoc	2,636 85	794 69	3,431 54	
Mono	4,567 19	2,037 11	6,604 30	63 43
Monterey	803 04	2,538 87	3,341 91	147 58
Napa	222 55	87 92	310 47	
Nevada	237 67	58 84	296 51	
Orange		5 60	5 60	
Placer	353 09	200 29	553 38	4 51
Plumas		44 80	44 80	
Riverside	4,067 52	6,161 70	10,229 22	141 22
Sacramento				
San Benito	2,383 10	1,073 88	3,456 98	39 84
San Bernardino	15,094 25	15,259 80	30,354 05	335 06
San Diego	2,758 49	2,687 11	5,445 60	219 38
San Francisco				
San Joaquin				
San Luis Obispo	607 09	3,277 30	3,884 39	123 05
San Mateo				
Santa Barbara		29 36	29 36	
Santa Clara	100 00	144 58	244 58	1 97
Santa Cruz		29 16	29 16	
Shasta	8,860 00	1,594 04	10,454 04	182 49
Sierra	460 00		460 00	
Siskiyou	598 00	882 88	1,480 88	
Solano				
Sonoma	946 11	143 40	1,089 51	
Stanislaus		240 80	240 80	
Sutter				
Tehama	902 56	550 84	1,453 40	70 85
Trinity	424 00	110 24	534 24	86
Tulare	640 00	1,053 17	1,693 17	34 62
Tuolumne	92 65	79 56	172 21	3 03
Ventura		90 59	90 59	
Yolo	80 00	82 05	162 05	5 44
Yuba	238 35	324 82	563 17	
Totals	$86,090 59	$66,758 17	$152,848 76	$2,837 23

Amount of annual rentals received for the leasing of state lands pursuant to the provisions of chapter 612, Statutes of California, 1911, from August 1, 1922, to August 1, 1924, and paid into the state treasury to the credit of the school land fund by the lessees was $8,628.42.

Amount of annual rentals received for the leasing of state lands pursuant to the provisions of chapter 829, Statutes of California, 1921, from August 1, 1922, to August 1, 1924, and paid into the state treasury to the credit of the general fund by the lessees was $946.

LEASING OF STATE LANDS.

The number of acres of state lands which are under lease from the State of California is as follows:

	Acres
State lands leased pursuant to the provisions of chapter 612, Statutes of California, 1911	3,451.00
State lands leased pursuant to the provisions of chapter 493, Statutes of California, 1917	56,938.93
State lands leased pursuant to the provisions of chapter 829, Statutes of California, 1921	4,730.00
Total	65,119.93

LANDS LISTED TO THE STATE.

From August 1, 1922, to August 1, 1924, lands were listed to the State of California by the United States, as follows:

Grant—	Acres
Indemnity or lieu lands	35,340.48
Swamp and overflowed lands	26,739.62
Total	62,080.10

CERTIFICATES OF PURCHASE ISSUED.

(From August 1, 1922, to August 1, 1924.)

Grant	Number of certificates	Acres
Sixteenth and thirty-sixth sections and indemnity or lieu lands	605	87,453.42
Swamp and overflowed lands	8	1,389.76
Lake lands	1	19.44
Sovereign lands	7	251.21
Totals	621	89,113.83

PATENTS ISSUED.

(From August 1, 1922, to August 1, 1924.)

	Number of patents	Acres
Sixteenth and thirty-sixth sections and indemnity or lieu lands	469	71,383.58
Swamp and overflowed lands	9	455.54
Lake lands	3	456.80
Totals	481	72,295.92

LAND SURVEYORS LICENSED.

Licenses issued to land surveyors from August 1, 1922, to August 1, 1924, numbered 165.

LAND TITLE LAW.

Pursuant to the provisions of chapter 800, Statutes of California, 1917, I beg to report that on August 1, 1923, certificates of title had been issued pursuant to the registration of land titles under "The Torrens Law" in sixteen of the fifty-eight counties of the State of California, the registrars of the sixteen counties having registrations reporting as follows:

Alameda County.

94 certificates, which includes all transfers, issued up to August 1, 1923.

Fresno County.

2 certificates issued up to August 1, 1923.

Humboldt County.
163 certificates issued up to August 1, 1923.

Imperial County.
230 certificates issued up to August 1, 1923.

Kern County.
30 certificates issued up to August 1, 1923.

Los Angeles County.
22,519 certificates issued up to August 1, 1923.

Orange County.
2,765 certificates issued up to August 1, 1923.

Riverside County.
117 certificates issued up to August 1, 1923.

San Bernardino County.
970 certificates issued up to August 1, 1923.

San Diego County.
1,954 certificates issued up to August 1, 1923.

San Francisco County.
8 certificates issued up to August 1, 1923.

Santa Barbara County.
102 certificates issued up to August 1, 1923.

Santa Cruz County.
9 certificates issued up to August 1, 1923.

Sonoma County.
196 certificates issued up to August 1, 1923.

Tulare County.
36 certificates issued up to August 1, 1923.

Ventura County.
1 certificate issued up to August 1, 1923.

The Torrens act provides that upon the original registration of any land, a sum equal to one-tenth of one per cent of the assessed value of the land including permanent improvements thereon as the same were valued for county taxation the last time said land and permanent improvements or either thereof were assessed for county taxes next preceding the filing of the petition shall be collected by the registrar and paid to the State Treasurer to be credited to the "Torrens Title Assurance Fund." The books of the State Treasurer show that on August 1, 1923, the "Torrens Title Assurance Fund" contained State of California Harbor Improvement 4 per cent bonds having a face value of $23,000, which were purchased for the benefit of said fund, for the sum of $22,255.19, and that the amount of cash in said fund on August 1, 1923, was $258.70.

LAND TITLE LAW.

Pursuant to the provisions of chapter 800, Statutes of California, 1917, I beg to report that the registrars of titles under "The Torrens Law" in the sixteen counties of the state in which registrations of land have been made up to August 1, 1924, advised me as follows:

Alameda County.

Relative to the total number of registrations or certificates of title issued, will advise that there were no new certificates issued—only transfers during 1924.

In 1923 the registrar reported 94 certificates issued, including all transfers, up to August 1 1923.

Fresno County.

The registrar of Fresno County made no report this year but in 1923 he reported that two certificates were issued up to August 1, 1923.

Humboldt County.

"The total number of Torrens certificates of title issued up to August 1, 1924, is 182."

Imperial County.

"Our total number of Torrens certificates up to August 1, 1924, is 244."

Kern County.

We have four registrations Torrens Act and this office has issued 43 certificates to August 1, 1924.

Los Angeles County.

The total number of certificates issued under the Land Registration Act (Torrens) up to August 1, 1924, was 28,853 and the total number of documents filed for record in said department from August 1, 1923, to August 1, 1924, was 19,217.

Orange County.

905 parcels of land have been registered under the Land Title Law of California in this county; and 3496 certificates of title issued up to August 1, 1924.

Riverside County.

"The total number of certificates issued in this county up to August 1, 1924, are 139, and no new decrees issued since February 6, 1923, and as the number of said certificates was 110 you will see that we have only issued 20 continuation-certificates since that date."

San Bernardino County.

The total number of registrations under the Registered Land Title Law, up to August 1st, is 475.

San Diego County.

The total number of certificates of title issued up to August 1, 1924, is 2187.

San Francisco County.

During the entire life of the Torrens Act there have been filed in this department but five original decrees. Nine certificates of title have been issued.

Santa Barbara County.

"We have 176 certificates of title to date."

Santa Cruz County.

There has been one registration under the Torrens system in our office and we have issued ten certificates of title.

Sonoma County.

Up to August 1, 1924, there had been 249 certificates of title issued, 230 documents filed and no new registrations, leaving the total separate parcels of land registered as 84.

Tulare County.

"Total number of certificates issued 38."

Ventura County.

The registrar of Ventura County made no report this year but in 1923 he reported that one certificate was issued up to August 1, 1923.

The Torrens act provides that upon the original registration of any land, a sum equal to one-tenth of one per cent of the assessed value of the land including permanent improvements thereon as the same were valued for county taxation the last time said land and permanent improvements or either thereof were assessed for county taxes next preceding the filing of the petition shall be collected by the registrar and paid to the State Treasurer to be credited to the "Torrens Title Assurance Fund." The books of the State Treasurer show that on August 1, 1924, the "Torrens Title Assurance Fund" contained State of California Harbor Improvement 4 per cent bonds having a face value of $23,000, which were purchased for the benefit of said fund, for the sum of $22,255.19, and that the amount of cash in said fund on August 1, 1924, was $1,605.56.

Respectfully submitted.

W. S. Kingsbury,
Surveyor General.

LAWS GOVERNING THE SALE OF SCHOOL LANDS, AND THE LEASING OF LANDS, OF THE STATE OF CALIFORNIA

Together with Rules, Regulations and Information Concerning Same

And

LIST OF THE VACANT SCHOOL LANDS ON SEPTEMBER 29, 1924.

LAW GOVERNING THE SALE OF SCHOOL LAND UNSUITABLE FOR CULTIVATION.

CHAPTER 207.

An act to amend an act entitled "An act providing for the sale of certain state lands," approved May 19, 1915, by extending the provisions thereof to certain lands heretofore reserved from sale, and by providing for the sale or exchange of such lands.

[Approved May 6, 1919.]

The people of the State of California do enact as follows:

SECTION 1. An act entitled "An act providing for the sale of certain state lands," approved May 19, 1915, is hereby amended to read as follows:

Section 1. The unsold portions of the sixteenth and thirty-sixth sections of school lands not included within the exterior boundaries of national reservations, the unsold portions of the five hundred thousand acres granted to the state for school purposes, and the unsold portions of the listed lands selected of the United States in lieu of the sixteenth and thirty-sixth sections and losses to the school grant which are not suitable for cultivation shall be sold at public auction to citizens of the United States by the surveyor general under rules and regulations prescribed by him, payment to be made as follows: The full purchase price of the land, or ten per cent thereof and interest to the first day of January following at the rate of six per cent per annum on the unpaid balance of the purchase price, to be paid at the time of sale; the unpaid balance of the purchase price shall bear interest at the rate of six per cent per annum, payable in advance on the first day of each year, at which time the purchaser may pay as many one-tenths of the purchase price as he may desire; *provided*, that the legislature may require the payment of the unpaid balance of the purchase price within five years after the passage of an act requiring such payment. All payments to be made to the county treasurer of the county in which the land is situated.

SEC. 2. From and after the date upon which this act takes effect, the surveyor general may sell in like manner and upon like conditions as to payment and interest any of the lands heretofore reserved from sale by the provisions of section three thousand four hundred eight *b* of the Political Code which have not been used as bases for indemnity selections, as provided in section three thousand four hundred six *a* of said code, or otherwise disposed of under any law of this state; *provided, however*, lands which in his judgment contain growth valuable for forest-cover protection to watersheds, or are valuable for reservoir sites, shall not be sold or exchanged under the provisions of this act.

Whenever he shall deem it to the advantage of the state so to do, he may, with the concurrence of the state board of control, exchange for lands of the United States of equal area, pursuant to law, any of said reserved lands in place, and the lands so acquired in exchange may be thereafter sold in the same manner and upon like conditions as to payment and interest as hereinabove set forth. Nothing herein contained shall be construed to affect the right of the surveyor general to use as bases for indemnity scrip, as provided in sections three thousand four hundred six *a*, three thousand four hundred eight *b*, three thousand

four hundred eight *c*, and three thousand four hundred eight *d* of the Political Code, any of said reserved lands not otherwise disposed of under the provisions of this act.

SEC. 3. Whenever any person shall make actual settlement, in good faith, upon any such land, with intent to purchase the same pursuant to the provisions of an act entitled "An act providing for the sale of certain state lands suitable for cultivation," approved May 19, 1915, and the surveyor general shall, thereafter, upon an examination of such lands, determine it to be unsuitable for cultivation, he may, with the concurrence of the state board of control, fix a price at which such land may be sold to such actual settler, as provided in the act last named, and such actual settler shall have the right to purchase such land, at the price so fixed, at any time within a period of six months thereafter. The purchase price of all timber lands shall be paid in full at the time of sale.

SEC. 4. In any and all notices of public sale, the surveyor general shall reserve the right to reject any and all bids.

SEC. 5. When the full purchase price has been paid the purchaser shall be entitled to a patent for the land.

SEC. 6. Those parts of all acts in conflict with this act are hereby repealed.

LAW GOVERNING THE SALE OF SCHOOL LAND SUITABLE FOR CULTIVATION.

CHAPTER 208.

An act to amend an act entitled "An act providing for the sale of certain state lands suitable for cultivation," approved May 19, 1915.

[Approved May 6, 1919.]

The people of the State of California do enact as follows:

SECTION 1. An act entitled "An act providing for the sale of certain state lands suitable for cultivation," approved May 19, 1915, is hereby amended to read as follows:

Section 1. The unsold portions of the sixteenth and thirty-sixth sections of school lands not included within the exterior boundaries of national reservations, the unsold portions of the five hundred thousand acres granted to the state for school purposes, and the unsold portions of the listed lands selected of the United States in lieu of the sixteenth and thirty-sixth sections and losses to the school grant, which are suitable for cultivation shall be sold to actual settlers in quantities not exceeding three hundred twenty acres to any one person under the provisions of section three thousand four hundred ninety-five of the Political Code, at a price to be fixed by the state board of control and the state surveyor general, payment to be made as follows: The full purchase price of the land, or ten per cent thereof and interest to the first day of January following, at the rate of six per cent per annum on the unpaid balance of the purchase price; the unpaid balance of the purchase price shall bear interest at the rate of six per cent per annum, payable in advance on the first day of each year, at which time the purchaser may pay as many one-tenths of the purchase price as he may desire; *provided*, that the legislature may require the payment of the unpaid balance of the purchase price within five years after the passage of an act requiring such payment.

Sec. 2. Actual settlers, within the meaning of this act, are persons who have resided in good faith on the land for a period of not less than one year, to the exclusion of any other residence or fixed place of habitation during such time.

Sec. 3. Any person who shall in good faith settle upon any land in the belief that the same was suitable for cultivation shall, in the event the surveyor general, upon inspection, determines said land to be unsuitable for cultivation, be a preferred purchaser for a period of six months from the date of such decision; *provided*, that in cases where the surveyor general has heretofore decided that lands settled upon were unsuitable for cultivation said settlers shall be preferred purchasers for a period of six months from the date that this act takes effect.

LAW GOVERNING THE LEASING OF SCHOOL LANDS FOR AGRICULTURAL, GRAZING AND RECREATIONAL PURPOSES.

CHAPTER 493.

An act providing for the leasing of certain state lands and making an appropriation for the purposes of this act.

[Approved May 17, 1917.]

(Effective July 27, 1917.)

The people of the State of California do enact as follows:

SECTION 1. Any person, firm or corporation desiring to lease any of the unsold portions of the sixteenth and thirty-sixth sections of school lands and the unsold portion of the listed lands selected from the public lands of the United States in lieu of the sixteenth and thirty-sixth sections and losses to the school grant must make application therefor to the surveyor general of the state, describing the lands sought to be leased by legal subdivisions. The application must be accompanied by the filing fee of five dollars. All applications to lease lands under this act shall be approved or rejected by the surveyor general within ninety days after the receipt thereof.

SEC. 2. Upon receipt of an application to lease any of the lands under this act the surveyor general shall appraise such lands and fix the annual rental per acre therefor; such charge to be approved by the state board of control.

SEC. 3. Whenever any lease is delivered to the applicant by the surveyor general the lessee shall within fifteen days thereafter, execute and return such lease to the state surveyor general and make payment of the first annual rental. The surveyor general shall receive the money and give a receipt therefor. All subsequent annual payments of rental must be paid to the state surveyor general in like manner fifteen days after they become due. In case payments are not made as herein provided, the lease and all rights thereunder shall cease and terminate.

SEC. 4. No lease shall be for a period longer than ten years, and such lease shall terminate upon the sale of said lands, or any portion thereof, by the state and the lessee shall be notified by registered mail by the state surveyor general upon the sale of said land at public auction to the highest bidder as provided in that certain act entitled "An act providing for the sale of certain state lands," approved May 19, 1915. The date of the termination of the lease shall be on the date the certificate of purchase is issued to the purchaser of the land from the State of California by the register of the state land office, except when a lease embraces land suitable for cultivation and an application from an actual settler to purchase said land is received and filed by the surveyor general, then the lease shall terminate on the date said application is filed of record in the surveyor general's office and the lessee is to be notified by registered mail of the filing of said application to purchase said land, or any portion thereof, from the state and of the termination of the lease. Possession under any lease hereby authorized shall not be held, deemed or construed to be adverse to that of any person who becomes an actual settler upon any portion of land in such lease described, with intent to purchase the same in the manner provided by law.

SEC. 5. Any lease for sixteenth and thirty-sixth sections or any portion thereof which may now or may hereafter be included within the exterior boundaries of a national reservation or of a reserve, or within the exterior boundaries of lands withdrawn from public entry, shall terminate whenever the State of California shall designate said lands as bases for indemnity selections as provided by law. The lessee is to be notified by the surveyor general by registered mail whenever the State of California designates the land as bases for indemnity selection or selections.

SEC. 6. If a lease is terminated by reason of the filing of an application to purchase land suitable for cultivation, or by the sale of land at public auction, or by the designation of land as bases for indemnity selection or selections, the lessee shall surrender the lease to the surveyor general and receive in exchange therefor from the surveyor general a certificate showing the proportionate amount of the annual payment to be refunded to the lessee, for the tract or tracts of land that have been disposed of by the State of California, and the state controller, upon the surrender to him of the said surveyor general's certificate, with the approval of the board of control endorsed thereon, shall issue to the lessee a warrant for the said amount payable out of the state school land fund and the state treasurer shall pay the same. If all the tracts of land described in said surrendered lease have not been disposed of by the state, the lessee shall be entitled, without the payment of any additional fee, to a new lease for the remaining tracts of land for the balance of the unexpired term of the surrendered lease, at the same annual rental per acre.

SEC. 7. The surveyor general is hereby authorized to prepare, make, execute and deliver all papers, instruments, and documents and to do any and all things necessary to carry out the provisions of this act.

SEC. 8. All moneys received as rental for such lands above mentioned shall be paid into the state school land fund.

SEC. 9. There is hereby appropriated out of any moneys in the state treasury to the credit of the state school land fund, not otherwise appropriated, the sum of three thousand dollars, or so much thereof as may be necessary, to be used in refunding unearned rentals under the provisions of section six of this act.

LAW GOVERNING THE GRANTING OF PERMITS AND LEASES TO PROSPECT FOR AND TAKE MINERALS FROM STATE LANDS.

CHAPTER 303.

An act to reserve all minerals in state lands; to provide for examination, classification and report on the mineral and other character of state lands; to provide for the granting of permits and leases to prospect for and take any such minerals; to provide for the rents and royalties to be paid, and granting certain preference rights; to provide for the making of rules, regulations and contracts necessary to carry out the purposes of this act; and repealing acts or parts of acts in conflict herewith; providing for an appropriation to defray the cost of administering this act.

[Approved May 26, 1921.]

The people of the State of California do enact as follows:

SECTION 1. All coal, oil, oil shale, gas, phosphate, sodium, and other mineral deposits in lands belonging to the state, or which may become the property of the state, are hereby reserved to the state; *provided, however*, that nothing in this act shall apply to lands acquired by the state on a sale of delinquent taxes, except such land, the deed for which is required to be filed in the surveyor general's office. Such deposits are reserved from sale except upon a rental and royalty basis, as herein provided for; and a purchaser of any lands belonging to the state, or which may become the property of the state, shall acquire no right, title or interest in or to, such deposits except as hereinafter expressly provided; and the right of such purchaser shall be subject to the reservation of all coal, oil, oil shale, gas, phosphate, sodium, and other mineral deposits, and to the conditions and limitations prescribed by law providing for the state and persons authorized by it to prospect for, mine, and remove such deposits, and to occupy and use so much of the surface of said land as may be required for all purposes reasonably extending to the mining and removal of such deposits therefrom.

SEC. 2. All applications to purchase state lands which may be filed subsequent to the passage of this act, and all sales shall be subject to and contain a reservation to the state of one-sixteenth of all coal, oil, gas, and other mineral deposits in all land so acquired, as hereinafter provided for, and all certificates of purchase and patents issued therefor, shall contain such reservation.

SEC. 3. The surveyor general may from time to time classify any or all state land for its different possible values and uses, and, when he deems it advisable, may require the state mineralogist, director of agriculture or other organization, agency or institution of the state government to make such classification. It is hereby expressly made the duty of any such officer, organization, agency or institution to make such classification and to render a report thereon upon the application of the surveyor general.

SEC. 4. The surveyor general is hereby authorized, upon the payment to him of fifty cents per acre, for each acre in area embraced within the boundaries of the lands proposed to be prospected and under such rules and regulations as he may prescribe, to grant to any person or association of persons, who are residents of the State of California

and citizens of the United States or who have declared their intention of becoming such, or corporations ninety per cent of whose stockholders are citizens of the United States a prospecting permit, which shall give the exclusive right, for a period not exceeding two years, to prospect for oil or gas, upon not exceeding six hundred forty acres of land wherein such deposits of oil or gas belong to the state and are not within any known geological structure of a producing oil or gas field, upon condition that the permittee shall begin drilling operations within six months from the date of the permit, and shall within one year from and after the date of the permit, drill one or more wells for oil or gas to a depth of not less than one thousand feet each, unless valuable deposits of oil or gas shall be sooner discovered, and shall, within two years from date of the permit, drill for oil or gas to an aggregate depth of not less than two thousand feet unless valuable deposits of oil or gas shall be sooner discovered. The surveyor general may, if he shall find that the permittee has been unable with the exercise of diligence to test the land in the time granted by the permit, extend any such permit for such time, not exceeding two years, and upon such conditions as he shall prescribe. Whether the lands sought in any such application and permit are surveyed or unsurveyed the applicant shall, prior to filing his application for permit, locate such land in a reasonably compact form and according to the legal subdivisions of the public land surveys if the land be surveyed; and in an approximately square or rectangular tract, if the land be an unsurveyed tract, the length of which shall not exceed two and one-half times its width; the land to be surveyed by the surveyor general at the expense of the applicant for the permit in such form as the surveyor general shall deem to be to the best interest of the state; *provided, however*, that in case of prospecting permits and leases to river beds, lake beds, overflowed, tide and submerged lands, the width or length of the prospecting permit or lease along the shore line, measured on an east and west or north and south line, shall not exceed one-quarter mile. If the applicant shall cause to be erected upon the land for which a permit is sought a monument not less than four feet high, at some conspicuous place thereon, and shall post a notice in writing on or near said monument, stating that an application for permit will be made within thirty days after the date of posting said notice, giving the name of the applicant, the date of the notice, and such a general description of the land to be covered by such permit by reference to courses and distances from such monument and such other natural objects and permanent monument as will reasonably identify the land, stating the amount thereof in acres, he shall during the period of thirty days following such marking and posting, be entitled to a preference right over others to a permit for the land so identified; *provided, however*, that applicant shall, as a part of his application for a permit, show that within two days after the posting of the said notice, he recorded a copy of the same in the county recorder's office of the county in which the said land is situated. The applicant shall, within ninety days after receiving a permit, mark each of the corners of the tract described in the permit upon the ground with substantial monuments, so that the boundaries can be readily traced on the ground, and shall post in a conspicuous place upon the lands a notice that such permit has been granted and a description of the lands covered thereby; *provided, however*, that where the boun-

daries of the land sought to be prospected or developed under lease are wholly or partially in river or lake beds, overflowed, tide and submerged lands, the notice shall be conspicuously posted on a monument as close to a corner of the land as possible and shall specifically describe the area to be developed by courses and distances so that the limits of the area can be easily determined; *provided further, however,* that in no case shall permits or leases be granted covering tide, overflowed or submerged lands fronting on an incorporated city, or for a distance of one mile on either side thereof; *provided further, however,* that in case of an application for a permit or a lease covering tide, overflowed or submerged land by anyone other than the littoral or riparian proprietor, said littoral or riparian proprietor shall have six months within which to file an application for a permit or lease, but if said littoral or riparian proprietor fails to comply with the requirements of this act and its rules and regulations made in pursuance hereof, his preferential rights shall thereupon cease and forever be terminated, and the original applicant shall be permitted to proceed with his application.

SEC. 5. Upon establishing to the satisfaction of the surveyor general that valuable deposits of oil or gas have been discovered within the limits of the land embraced in any permit, the permittee shall be entitled to a lease for one-fourth of the land embraced in the prospecting permit; *provided,* that the permittee shall be granted a lease for as much as one hundred sixty acres of said lands, if there be that number of acres within the permit. The area to be selected by the permittee shall be in compact form and if surveyed, to be described by the legal subdivision of the public land surveys; if unsurveyed, to be surveyed by the surveyor general at the expense of the applicant for lease in accordance with rules and regulations to be prescribed by the surveyor general, and the lands leased shall be conformed to and taken in accordance with the legal subdivisions of such surveys; deposits made to cover expense of survey shall be deemed appropriated for that purpose, and any excess deposit may be repaid to the person or persons making such deposits or their legal representative. Such lease shall be for a term of twenty years upon a royalty of five per centum in amount or value of the production and the annual payment in advance of a rental of one dollar per acre, the rental paid for any one year to be credited against the royalties as they accrue for that year, with the right of renewal as prescribed in section eight hereof. The permittee shall also be entitled to a preference right to a lease for the remainder of the land in his prospecting permit at a royalty of not less than twelve and one-half per centum in amount or value of the production, and under such other conditions as are fixed for oil or gas leases in this act, the bonus and royalty to be determined by competitive bidding or fixed by such other method as the surveyor general may by regulations prescribe; *provided,* that the surveyor general shall have the right to reject any and all bids.

SEC. 6. Until the permittee shall apply for lease to the one quarter of the permit area heretofore provided for he shall pay to the State of California twenty per centum of the gross value of all oil or gas secured by him from the lands embraced within his permit and sold or otherwise disposed of, or held by him for sale or other disposition.

SEC. 7. All permits and leases of lands containing oil or gas, made or issued under the provisions of this act, shall be subject to the condi-

tion that no wells shall be drilled within two hundred feet of any of the outer boundaries of the lands so permitted or leased, unless the adjoining lands have been patented or the title thereto otherwise vested in private owners, and to the further condition that the permittee or lessee will, in conducting his explorations and mining operations, use all reasonable precautions to prevent waste of oil or gas developed in the land, or the entrance of water through wells drilled by him to the oil sands or oil bearing strata, to the destruction or injury of the oil deposits. Violations of the provisions of this section shall constitute grounds for the forfeiture of the permit or lease, to be enforced through appropriate proceedings in courts of competent jurisdiction.

SEC. 8. All unappropriated deposits of oil or gas situated within the known geologic structure of a producing oil or gas field and the unentered lands containing the same not subject to preferential lease, may be leased by the surveyor general to the highest responsible bidder by competitive bidding under general regulations to qualified applicants in areas not exceeding six hundred forty acres and in tracts which shall not exceed in length two and one-half times the width, the surveyed land to be leased according to legal subdivisions, the unsurveyed land to be surveyed by the surveyor general, at the expense of the lessee, in such form as the surveyor general shall deem to be to the best interest of the state; *provided, however*, that in case of leases to river bed, lake bed, overflowed, tide and submerged lands, the width or length of the lease along the shore line, measured on an east and west or north and south line, shall not exceed one-quarter mile, such leases to be conditioned upon the payment by the lessee of such bonus as may be accepted and of such royalty as may be fixed in the lease, which shall not be less than twelve and one-half per centum in amount or value of the production, and the payment in advance of a rental of not less than one dollar per acre per annum thereafter during the continuance of the lease, the rental paid for any one year to be credited against the royalties as they accrue for that year. Leases shall be for a period of twenty years, with the prefential right in the lessee to renew the same for successive periods of ten years upon such reasonable terms and conditions as may be prescribed by the surveyor general, unless otherwise provided by law at the time of the expiration of such periods.

Whenever the average daily production of any oil well shall not exceed ten barrels per day, the surveyor general is authorized to reduce the royalty on future production when in his judgment the wells can not be successfully operated upon the royalty fixed in the lease. The provisions of this paragraph shall apply to all oil and gas leases made under this act.

SEC. 9. The right to prospect, and lease lands containing any other minerals shall be acquired in a similar manner as the right to prospect for and develop oil and gas, under such reasonable and proper rules and regulations, as the surveyor general shall from time to time prescribe.

SEC. 10. For the purpose, however, of promoting the sale of state land, and the more active cooperation of the owner of the soil, and to facilitate the development of its mineral resources the state hereby constitutes the purchaser of the soil, its agent for the purposes herein named and in consideration hereof, relinquishes to and vests in the purchaser of state lands an undivided fifteen-sixteenths of all oil

and gas and the value of the same that may be upon or within any state land purchased after the passage of this act. The purchaser of the soil is hereby authorized to sell or lease to any person, firm or corporation the oil and gas and other minerals that may be thereon or therein upon such terms and conditions as such purchaser and owner may deem best, subject, however, to the provisions of this act and the reservations herein contained; *and provided, further*, that the lessee or purchaser shall in every case pay to the state an undivided one-sixteenth of the mineral produced or the value thereof at the well or mine as may be determined by the surveyor general; *provided further, however*, that upon the discovery of oil or gas in paying quantities on adjoining lands the purchaser shall within three months thereafter begin or cause to be started the drilling of a well upon his land, which drilling shall be continuous, as may be provided for by appropriate rules and regulations, prescribed by the surveyor general.

SEC. 11. The surveyor general shall reserve and may exercise the authority to cancel any prospecting permit or lease upon failure by the permittee to exercise due diligence and care in the prosecution of the prospecting work in accordance with the terms and conditions stated in the permit or lease and shall insert in every such permit or lease issued under the provisions of this act appropriate provisions for its cancellation by him.

SEC. 12. No person, association or corporation, shall take or hold, under the terms of this act, more than one oil or gas permit or lease; no corporation shall hold any interest as a stockholder of another corporation in more than one lease and no person or corporation shall take or hold any interest or interests as a member of an association or associations or as a stockholder of a corporation or corporations holding a lease under the provisions hereof, which, together with the area embraced in any direct holding of a lease, under this act, or which, together with any other interest or interests as a member of an association or associations or as a stockholder of a corporation or corporations holding a lease under the provisions hereof, for any kind of mineral leased hereunder, exceeds in the aggregate an amount equivalent to the maximum number of acres of the respective kinds of minerals allowed to any one lessee under this act. Any interest held in violation of this act shall be forfeited to the State of California by appropriate proceedings for that purpose in the superior court for the county in which the property, or some part thereof, is located, except that any ownership or interest forbidden in this act which may be acquired by descent, will, judgment, or decree may be held for two years and not longer after its acquisition; *provided*, that nothing herein contained shall be construed to limit or to prevent any number of lessees under the provisions of this act from combining their several interests so far as may be necessary for the purposes of constructing and carrying on the business of a refinery, or of establishing and constructing as a common carrier a pipe line or lines of railroads to be operated and used by them jointly in the transportation of oil from their several wells, or from the wells of other lessees under this act, or the transportation of coal; *provided, further*, that if any of the lands or deposits leased under the provisions of this act shall be subleased, trusteed, possessed or controlled by any device permanently, temporarily, directly, indirectly,

tacitly, or in any manner whatsoever, so that they form part of, or are in anywise controlled by any combination in the form of an unlawful trust, with consent of lessee, or form the subject of any contract or conspiracy in restraint of trade in the mining or selling of coal, phosphate, oil, oil shale, gas, or sodium entered into by the lessee, or any agreement or understanding, written, verbal, or otherwise to which such lessee shall be a party, of which his or its output is to be or become the subject, to control the price or prices thereof or of any holding of such lands by any individual, partnership, association, corporation, or control in excess of the amounts of lands provided in this act, the lease thereof shall be forfeited by appropriate court proceedings.

SEC. 13. Rights of way through all state lands are hereby granted for pipe-line purposes for the transportation of oil or natural gas to any applicant possessing the qualifications provided in section four of this act, to the extent of the ground occupied by the said pipe line and twenty-five feet on each side of the same under such regulations as to survey, location, application, and use as may be prescribed by the surveyor general and upon the express condition that such pipe lines shall be constructed, operated, and maintained as common carriers; *provided,* that the surveyor general shall in express terms reserve and shall provide in every lease of oil lands hereunder that the lessee, assignee, or beneficiary, if owner or operator or owner of a controlling interest in any pipe line or of any company operating the same which may be operated accessible to the oil derived from lands under such lease, shall at reasonable rates and without discrimination accept and convey the oil of the state or of any citizen or company not the owner of any pipe line, operating a lease or purchasing gas or oil under the provisions of this act; *provided,* that no right of way shall hereafter be granted over said lands for the transportation of oil or natural gas except under and subject to the provisions, limitations, and conditions of this section. Failure to comply with the provisions of this section or the regulations prescribed by the surveyor general shall be ground for forfeiture of the grant by appropriate proceedings prosecuted in the superior court for the county in which the property, or some part thereof, is located; *and provided, further,* that all the rights and privileges as are now, or as may hereafter be provided by law, respecting the acquisition of rights of ingress, egress and regress over the property of another, by proceedings in eminent domain, are hereby expressly given to a permittee or lessee so that such permittee or lessee may carry on the operations contemplated under the terms of this act.

SEC. 14. Any permit, lease, occupation, or use permitted under this act shall reserve to the surveyor general the right to permit upon such terms as he may determine to be just, for joint or several use, such easements or rights of way, including easements in tunnels upon, through, or in the lands leased, occupied, or used as may be necessary or appropriate to the working of the same or of other lands containing the deposits described in this act, and the treatment and shipment of the products thereof by or under authority of the state, its lessees, or permittees, and for other public purposes; *provided,* that said surveyor general, in his discretion, in making any lease under this act, may reserve to the state the right to lease, sell, or otherwise dispose of the surface of the lands embraced within such lease under existing law or

laws hereafter enacted, in so far as said surface is not necessary for use of the lessee in extracting and removing the deposits therein; *provided, further*, that if such reservation is made it shall be so determined before the offering of such lease; *and provided, further*, that the said surveyor general, during the life of the lease, is authorized to issue such permits for easement herein provided to be reserved.

SEC. 15. No lease issued under the authority of this act shall be assigned or sublet, except with the consent of the surveyor general. The lessee may, in the discretion of the surveyor general, be permitted at any time to make written relinquishment of all rights under such a lease and upon acceptance thereof be thereby relieved of all future obligations under said lease, and may with like consent surrender any legal subdivision of the area included within the lease. Each lease shall contain provisions for the purpose of insuring the exercise of reasonable diligence, skill, and care in the operation of said property; a provision that such rules for the safety and welfare of the miners and for the prevention of undue waste as may be prescribed by said surveyor general shall be observed, including a restriction of the workday to not exceeding eight hours in any one day for underground workers except in cases of emergency; provisions prohibiting the employment of any boy under the age of sixteen or the employment of any girl or woman, without regard to age, in any mine below the surface; provisions securing the workmen complete freedom of purchase; provision requiring the payment of wages at least twice a month in lawful money of the United States, and providing proper rules and regulations to insure the fair and just weighing or measurement of the coal mined by each miner, and such other provisions as he may deem necessary to insure the sale of the production of such leased lands to the public at reasonable prices, for the protection of the interests of the state, for the prevention of monopoly, and for the safeguarding of the public welfare.

SEC. 16. Any permit or lease issued under the provisions of this act may be forfeited and canceled by an appropriate proceeding in the superior court for the county in which the property, or some part thereof is located, whenever the lessee or permittee fails to comply with any of the provisions of the permit or the lease, or of the general regulations promulgated under this act and in force at the date of the lease or permit; and the lease may provide for resort to appropriate methods for the settlement of disputes or for remedies for breach of specified conditions thereof.

SEC. 17. Any person, or association of persons, corporate or otherwise, who enters or has entered upon any land or lands coming under the provisions of this act, and who is holding, or attempting to hold or develop, any such land, is guilty of a trespass, and the claims being exerted are hereby declared to be null and void, and any property placed upon the said land is hereby declared forfeited to the state, and the surveyor general is hereby authorized and empowered to issue a prospector's permit or lease on the said land to any qualified claimant who shall comply with the provisions of this act after it becomes effective; *provided, however*, that the surveyor general may, and he is hereby expressly authorized and empowered to grant a lease, on a royalty of twelve and one-half per centum of the production, to any qualified person, or association of persons, corporate or otherwise, who shall

apply therefor within three months after the passage of this act, and who, at least six months prior to the passage of this act, was operating a producing well or wells, or who was drilling the same, or actually mining for or otherwise developing the mineral products on the said area of lands; *provided, further, however*, that in case of such a lease the area shall be limited to that which is necessary for the operation of the wells or mines, and the surveyor general shall have the right to call for competitive bids for the lease or leases upon the surrounding area of land as hereinbefore provided for.

SEC. 18. The surveyor general of the state is authorized to prescribe necessary and proper rules and regulations and to do any and all things necessary to carry out and accomplish the purposes of this act, also to fix and determine the boundary lines of any structure, or oil or gas field, for the purpose of this act.

SEC. 19. All moneys received by the surveyor general under the provisions of this act from rents, fees, bonuses and royalties accruing from the use of state school land shall be paid into the "school fund," all other moneys received under the provisions of this act shall be deposited in the "general fund."

SEC. 20. For the purposes of administering this act, there is hereby appropriated out of any money in the state treasury, not otherwise appropriated, the sum of ten thousand dollars to be expended by the surveyor general, and the state controller is directed to draw his warrant in favor of the person or persons entitled to the same, upon demand of the surveyor general approved by the board of control, and the state treasurer is directed to pay the same.

SEC. 21. If any section, subsection, sentence, clause or phrase of this act is for any reason held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this act. The legislature hereby declares that it would have passed this act, and each section, subsection, sentence, clause and phrase thereof, irrespective of the fact that any one or more other sections, subsections, sentences, clauses or phrases be declared unconstitutional.

SEC. 22. All acts and parts of acts, inconsistent herewith, are hereby repealed.

RULES, REGULATIONS AND INFORMATION CONCERNING THE SALE OF SCHOOL LANDS TOGETHER WITH INFORMATION CONCERNING THE LEASING OF LANDS OF THE STATE OF CALIFORNIA.

Should a citizen of the United States desire to purchase land unsuitable for cultivation pursuant to the provisions of chapter 207, Statutes of California, 1919 (see page 17, ante), he should so advise the Surveyor General at Sacramento, by letter, giving a description of the land. All persons who have made their desires to purchase land known to the Surveyor General will be notified by mail when a sale of the land is to be held.

School lands unsuitable for cultivation will be sold at public auction in tracts ranging from the smallest subdivision up to 640 acres, there being no limit as to the number of acres one person may buy. The Surveyor General reserves the right to reject any and all bids. At the time of bidding each bidder must present an affidavit that he is a citizen of the United States, which affidavit must contain the postoffice address of the affiant. Agents may bid for principals, upon submission

of affidavit of citizenship of principal and power of attorney to bid for principal.

The public auction sales will be held at places designated by the Surveyor General.

At the time of the acceptance of the bid the purchaser must pay to the treasurer of the county in which the land is situated the full purchase price of the land, or ten per cent thereof with interest on the balance at the rate of six per cent per annum from the date of sale to the first of January following. The purchase price of all timber lands must be paid in full at the time of sale. Lands located within national forests are, for the purposes of sale, considered timber lands and shall be sold for cash at not less than the current price of scrip. Should the timber value exceed the current price of scrip the timber value shall be the minimum price that will be accepted.

At the date of sale all of the land sold to one person in one county and land district will be embraced in one or more locations as desired by the purchaser, the entry or filing fee of $5 for each location to be paid to the Surveyor General at the sale. The purchaser must also pay the county treasurer $3 for each certificate of purchase, which will be issued pursuant to the provisions of section 3514 of the Political Code, upon surrender to the Surveyor General of the receipt of the county treasurer, showing payment as herein provided.

Lands located within national forests are subject to use as scrip at any time, therefore, a prospective purchaser of such lands at auction should write to the Surveyor General after a sale date has been determined, and prior to the sale, in order to ascertain whether or not the land in which he is interested has been used as scrip.

Certificates of purchase and all rights acquired thereunder are subject to sale by deed or assignment, executed and acknowledged before any officer authorized by law to take acknowledgments of conveyances of real property, or before the register, but patent for the land must issue in the name of the original purchaser upon payment of the full purchase price (section 3519, Political Code), subject to rights of way granted to the United States by an act of the legislature approved May 18, 1921 (chapter 173, Statutes of California, 1921), for the uses prescribed in the act of congress approved June 17, 1902, relating to irrigation and reclamation and reserving in the people the absolute right to fish thereupon. (Section 25, Article I, Constitution of California.)

The state also reserves one-sixteenth of all the minerals in the land. (Chapter 303, Statutes of California, 1921.)

The State of California does not issue maps or plats showing the location of the land, but having the description, the approximate location can be determined by using in conjunction with the accompanying list, county maps which can be secured from most stationery stores at a cost of about seventy-five cents. The school lands were all surveyed by the United States government but it may be that corners have since been obliterated, in which event it will be necessary, should one desire to have the corners located, to employ a surveyor for that purpose.

State school lands suitable for cultivation are subject to sale, to actual settlers only, under the provisions of chapter 208, Statutes of

California, 1919. Forms for application to purchase may be obtained from the Surveyor General.

State school lands are subject to lease for agricultural, grazing and recreational purposes under the provisions of chapter 493, Statutes of California, 1917. Forms for application to lease may be obtained by writing to the Surveyor General.

State lands may be prospected for minerals and leases obtained to take the minerals from the lands under the provisions of chapter 303, Statutes of California, 1921. Copy of rules and regulations governing the subject matter may be obtained from the Surveyor General.

W. S. Kingsbury,
State Surveyor General.

ALAMEDA COUNTY.

No vacant lands.

ALPINE COUNTY.

	Sec.	T. N.	R. E.	M.D.M. Acres
*S½ of SW¼, E½ of NE¼, SE¼	36	8	21	320
*N½, SW¼ of SW¼, SE¼ of SE¼	36	10	19	400
*NW¼, NE¼ of SW¼, W½ of NE¼, SE¼ of NE¼, SE¼	16	11	19	480
W½ of SE¼	31	11	19	80
*NW¼ of NW¼, SE¼ of NW¼, N½ of SE¼, SE¼ of SE¼, SW¼ of SW¼, Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	36	11	20	560.69
*Lots 5, 6, 15, 16	36	12	18	116.70
Total				1,957.39

AMADOR COUNTY.

	Sec.	T. N.	R. E.	M.D.M. Acres
*NE¼ of SE¼	36	8	16	40
*N½ of NE¼	16	9	17	80
Total				120

BUTTE COUNTY.

	Sec.	T. N.	R. E.	M.D.M. Acres
*SW¼	36	25	4	160

CALAVERAS COUNTY.

No vacant lands.

COLUSA COUNTY.

	Sec.	T. N.	R. W.	M.D.M. Acres
SE¼ of SE¼	31	13	4	40
*SE¼	16	17	8	160
*N½	36	17	8	320
*W½ of NE¼, NE¼ of NE¼, SW¼ of SE¼	36	18	8	160
Total				680

CONTRA COSTA COUNTY.

No vacant lands.

DEL NORTE COUNTY.

	Sec.	T. N.	R. E.	H.M. Acres
*SE¼ of SE¼	36	12	4	40
*W½ of NW¼, SE¼ of NW¼, NE¼ of SE¼	36	13	3	160
*NE¼	16	14	3	160
*W½ of SW¼, SW¼ of NE¼, W½ of SE¼	16	14	4	200
*SE¼ of NW¼, W½ of NE¼	36	15	3	120
	*16	15	4	640
*NW¼ of NW¼, SE¼ of SW¼, SW¼ of SE¼	36	16	3	120
*S½ of SW¼	16	16	4	80
*N½ of NE¼	36	16	4	80
*NW¼ of NW¼, NE¼ of SW¼	36	17	2	80
*NW¼ of NW¼, S½	16	17	3	360
*N½	36	18	1	320
*N½ of NW¼, SE¼ of NE¼	16	18	4	120
*S½ of NW¼	36	18	4	80

*Signifies that the lands are located within the exterior boundaries of a national forest.

DEL NORTE COUNTY—Continued.

	Sec.	T. N.	R. E.	H.M. Acres
*N½ of NW¼	36	18	5	80
*Lots 1, 2, 3, 4, S½	36	19	1	403.94
*Lots 1, 2, 3, 4, S½ of S½	36	19	2	304.38
Total				3,348.32

EL DORADO COUNTY.

	Sec.	T. N.	R. E.	M.D.M. Acres
SE¼ of NW¼	16	9	10	40
S½ and S½ of N½	16	9	12	480
*NW¼, E½ of NE¼, SE¼, E½ of SW¼	16	9	16	480
SE¼, E½ of SW¼, NW¼ of SW¼, NW¼ of NW¼, SE¼ of NW¼, SW¼ of NE¼	16	10	9	400
*N½, SE¼, N½ of SW¼, SE¼ of SW¼	16	10	17	600
N½ of NW¼, SW¼ of NW¼, NE¼ of SE¼	36	11	8	160
E½ of NW¼, NE¼, NW¼ of SE¼	36	12	10	280
*Lots 8 and 9	36	12	18	160
W½ of SW¼	36	13	9	80
*SW¼ of SW¼	16	13	15	40
Total				2,720

FRESNO COUNTY.

	Sec.	T. S.	R. E.	M.D.M. Acres
*NE¼ and E½ of NW¼	36	5	25	240
*SW¼ of SW¼	16	7	25	40
NE¼, W½ of NW¼, N½ of SW¼	36	9	22	320
*NE¼, N½ of SE¼, SE¼ of SE¼, E½ of SW¼, SE¼ of NW¼	36	9	23	400
*SE¼ of NW¼	36	10	24	40
*NW¼ of SE¼	16	10	30	40
*NW¼ of NE¼	16	11	20	40
*SE¼	36	12	24	160
*N½, SE¼, N½ of SW¼	36	12	25	560
	16	13	26	640.11
*SW¼ of SE¼	36	13	31	40
E½ of NE¼, NW¼ of NE¼, W½ of NW¼	16	14	27	200
NE¼, N½ of SE¼, SW¼, SW¼ of NW¼	36	14	27	440
E½	16	19	12	320
NE¼, E½ of SE¼, W½ of SW¼	36	19	12	320
NW¼, N½ of SE¼	16	19	13	240
NE¼ of NE¼	24	20	12	40
Total				4,080.11

GLENN COUNTY.

	Sec.	T. N.	R. W.	M.D.M. Acres
W½ of W½ and Lot 1	36	19	6	202.87
*E½, W½ of SW¼, SW¼ of NW¼	36	21	9	440
*SW¼	16	22	7	160
*SE¼ of NE¼	16	22	8	40
Total				842.87

*Signifies that the lands are located within the exterior boundaries of a national forest.

HUMBOLDT COUNTY.

	Sec.	T. N.	R. E.	H.M. Acres
NE¼ of SW¼, NW¼ of SE¼	16	1	5	80
*Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	36	3	5	487.76
	*16	6	5	640
*N½ of N½, SE¼ of NW¼, W½ of SE¼, E½ of SW¼	16	7	5	360
*SE¼ of NW¼	16	8	6	40
*E½, E½ of W½	36	8	6	480
*SW¼ of NW¼, NW¼ of SW¼	16	9	6	80
*SE¼ of NE¼, NE¼ of SE¼	36	9	6	80
*SW¼ of NW¼	16	10	6	40
W½ of SE¼	15	10	3	80
*E½ of NW¼, W½ of SE¼	16	11	4	160

	Sec.	T. S.	R. E.	H.M. Acres
*SE¼ of SW¼	36	1	5	40
N½ of NW¼, SE¼ of NW¼, W½ of NE¼, SE¼ of NE¼, N½ of SE¼	16	5	4	320
Total				2,887.76

IMPERIAL COUNTY.

	Sec.	T. S.	R. E.	S.B.M. Acres
N½ of NW¼, E½, SW¼	16	9	14	560
NE¼, S½ of NW¼, NE¼ of NW¼, N½ of S½, Lots 1, 2, 3, 4	36	9	14	602.60
	16	9	15	640
	36	9	15	640
	16	9	16	640
	36	9	16	640
	16	9	17	640
	36	9	17	640
	16	9	18	640
W½	36	9	18	320
	16	9	19	640
NE¼ of NE¼, SE¼ of SE¼	36	10	9	80
	16	10	11	640
	16	10	12	640
NW¼ of SW¼	16	10	15	40
N½, SW¼, SE¼ of SE¼	36	10	15	520
	16	10	16	640
	36	10	16	640
	16	10	17	640
	36	10	17	640
	16	10	18	640
	36	10	18	640
	16	10	19	640
	36	10	19	640
	16	10	20	640
W½ of SW¼	16	11	9	80
E½ of SE¼, SE¼ of NE¼, SW¼ of SW¼	36	11	9	160
	36	11	16	640
	16	11	17	640
	36	11	17	640
	16	11	18	640
	36	11	18	640
	16	11	19	640
	36	11	19	640
	16	11	20	640

*Signifies that the lands are located within the exterior boundaries of a national forest.

IMPERIAL COUNTY—Continued.

	Sec.	T. S.	R. E.	S.B.M. Acres
	36	11	20	640
	16	11	21	640
N½, N½ of SW¼	16	12	18	400
	16	12	19	640
	36	12	19	640
E½ and NW¼	16	12	20	480
	36	12	20	640
	16	12	21	640
W½ of W½	36	12	21	160
W½ of SE¼ of Tract 49	(16)	13	9	80
SW¼ of NE¼, NW¼ of SE¼ of Tract 60	(36)	13	9	80
N½ of N½, SE¼ of NW¼, SW¼ of NE¼, N½ of SW¼, SE¼ of SW¼, NW¼ of SE¼, SE¼ of SE¼	36	13	11	440
NW¼, W½ of NE¼, SE¼ of NE¼, W½ of SW¼, NE¼ of SW¼, SE¼	36	13	19	560
N½, SW¼ of SW¼	16	13	20	360
	36	13	20	640
Lots 1, 2, 3, 4, SW¼ of SW¼	16	13	22	163.72
W½ of W½	36	13	23	160
	16	14	9	640
S½ of SW¼, NE¼ of SE¼	36	14	9	120
E½ of SE¼	36	14	18	80
	36	14	19	640
	16	14	21	640
E½	36	14	21	320
SW¼	16	14	22	160
SE¼ of SE¼	16	15	10	40
SE¼ of SE¼	16	15	20	40
SE¼	36	15	20	160
N½, SE¼, W½ of SW¼	16	15	22	560
SE¼ of SE¼	36	16	9	40
SW¼ of SE¼	16	16	20	40
Lots 1, 2, 3	36	17	10	123.17
Total				30,609.49

INYO COUNTY.

	Sec.	T. S.	R. E.	M.D.M. Acres
N½	36	6	31	320
	36	6	33	640
*W½	16	6	35	320
*SE¼ of NE¼	16	6	36	40
N½ and SE¼	36	6	36	480
	16	6	37	640
	36	6	37	640
	16	6	38	640
	36	6	38	640
E½ of SW¼	16	7	32	80
	36	7	32	640
	*16	7	35	640
	36	7	35	640
	36	7	36	640
	16	7	37	640
	36	7	37	640
	16	7	38	640
	36	7	38	640
	16	7	39	640
	36	7	39	640

*Signifies that the lands are located within the exterior boundaries of a national forest.

INYO COUNTY—Continued.

	Sec.	T. S.	R. E.	M.D.M. Acres
	16	8	36	640
	36	8	36	640
	16	8	37	640
	36	8	37	640
	16	8	38	640
	36	8	38	640
	16	8	39	640
	36	8	39	640
E½	36	9	34	320
	*16	9	35	640
	*36	9	35	640
	*16	9	36	640
	36	9	36	640
	16	9	37	640
	36	9	37	640
	16	9	38	640
	36	9	38	640
N½ and NE¼ of SE¼	36	9	40	360
	16	9	41	640
W½	16	10	34	320
	36	10	34	640
	*16	10	36	640
*NE¼	36	10	36	160
SW¼	36	10	37	160
NW¼	16	10	40	160
	16	10	41	640
	36	10	41	640
W½ and SE¼	16	11	34	480
	16	11	37	640
	36	11	37	640
N½, N½ of SW¼, SW¼ of SW¼	16	11	40	440
N½ of NW¼, SW¼ of NW¼	36	11	40	120
	16	11	41	640
	36	11	41	640
Lots 1, 2, 3, 4, 5, S½ of SW¼, NW¼ of SW¼	16	11	44	245.95
Lots 1, 2, 3, 4, SW¼ of NW¼, SW¼, SW¼ of SE¼	36	11	44	362.89
E½ of E½	16	12	34	160
SW¼	16	12	35	160
*SW¼ of SW¼	36	12	35	40
	36	12	37	640
	36	12	39	640
NW¼ of NW¼	16	12	41	40
N½ of NW¼, SW¼ of NW¼	36	12	41	120
	16	12	44	640
	36	12	44	640
Lots 1, 2, 3, 4, 5, 6, W½, S½ of SE¼	16	12	45	453.17
Lots 1, 2, 3, 4, 5, W½ of NW¼, SE¼ of NW¼, SW¼, W½ of SE¼, SE¼ of SE¼	36	12	45	535.20
	36	13	34	640
SW¼ of SW¼	14	13	35	40
	16	13	38	640
E½ and S½ of SW¼	36	13	38	400
	16	13	39	640
	36	13	39	640
	16	13	44	640
	36	13	44	640
	36	13	45	640
E½	16	14	35	320
	36	14	35	640

*Signifies that the lands are located within the exterior boundaries of a national forest.

INYO COUNTY—Continued.

	Sec.	T. S.	R. E.	M.D.M. Acres
N½, SE¼, E½ of SW¼	16	14	38	560
	36	14	38	640
NW¼ and SE¼	16	14	39	320
N½, SW¼, N½ of SE¼, SW¼ of SE¼	36	14	39	600
	16	14	44	640
	36	14	44	640
	16	14	45	640
	36	14	45	640
	16	14	46	640
W½, Lots 1, 2, 3, 4	36	14	46	425.60
	16	15	35	640
NE¼	16	15	39	160
	16	15	40	640
	16	15	44	640
	36	15	44	640
	16	15	45	640
	36	15	45	640
	16	15	46	640
W½, Lots 1, 2, 3, 4	36	15	46	431.18
W½ of Lot 1 of NW¼	1	16	36	40
S½ of NW¼, SW¼ of NE¼, W½ of SE¼, E½ of SW¼	14	16	36	280
SW¼ of NW¼, NW¼ of SW¼, S½ of S½, N½ of NE¼, SE¼ of NE¼	16	16	36	360
NW¼ of NE¼	27	16	36	40
S½ of Lot 1 of NW¼, Lot 2 of NW¼, Lot 1 of SW¼, Lot 2 of SW¼, W½ of SE¼	7	16	37	373.46
Fractional NW¼ of NW¼, fractional NE¼ of NW¼, fractional NW¼ of NE¼, fractional E½ of NE¼	16	16	37	166.17
E½ of NE¼	36	16	37	80
	36	16	45	640
	16	16	46	640
W½, Lots 1, 2, 3, 4	36	16	46	432.44
All of fractional Sec.	19	17	37	15.45
Lot 1 and fractional NE¼ of SW¼	30	17	37	51
	36	17	41	640
	16	17	42	640
N½ and SW¼	36	18	36	480
Fractional NW¼ of NE¼, fractional SW¼ of NE¼, fractional NW¼ of SE¼, fractional SW¼ of SE¼	7	18	37	76
Fractional NW¼ of NE¼, fractional SW¼ of NE¼, fractional NW¼ of SE¼, and fractional SW¼ of SE¼	18	18	37	72
	36	18	37	640
	16	18	38	640
SW¼	16	18	39	160
	36	18	39	640
	16	18	40	640
	36	18	40	640
	16	18	42	640
	36	18	42	640
E½ of NW¼, N½ of NE¼	36	19	36	160
	16	19	37	640
	36	19	37	640
	16	19	39	640
	36	19	39	640
	16	19	40	640
	36	19	40	640
	36	19	42	640
	16	19	43	640
	36	19	43	640

INYO COUNTY—Continued.

	Sec.	T. S.	R. E.	M.D.M. Acres
SW¼	13	20	37	160
NW¼ of NE¼	15	20	37	40
NE¼ of SW¼, S½ of SE¼	21	20	37	120
NE¼	23	20	37	160
W½	24	20	37	320
NE¼	16	20	40	160
	16	20	41	640
	36	20	42	640
	16	20	43	640
	36	20	43	640
	16	21	38	640
	36	21	38	640
	16	21	39	640
	36	21	39	640
	16	21	40	640
	36	21	40	640
	16	21	41	640
N½ and SE¼	36	21	41	480
	16	21	42	640
	36	21	42	640
	16	21	43	640
	36	21	43	640
S½ of SE¼	16	21	44	80
	36	22	38	640
	16	22	39	640
	36	22	39	640
	16	22	40	640
	36	22	40	640
	16	22	41	640
	36	22	41	640
	16	22	42	640
	36	22	42	640
	16	22	43	640
	36	22	43	640
	16	22	44	640
	16	23	38	640
	36	23	38	640
	16	23	39	640
	36	23	39	640
N½, N½ of SE¼, SE¼ of SE¼	16	23	40	440
	36	23	40	640
	16	23	41	640
	36	23	41	640
	16	23	42	640
	36	23	42	640
	16	23	43	640
NE¼, N½ of NW¼, SE¼ of NW¼, N½ of S½, SE¼ of SE¼, SW¼ of SW¼	16	23	44	520
NW¼, NE¼ of SW¼, S½ of SW¼	36	23	44	280
	16	24	39	640
	16	24	40	640
E½, NW¼, E½ of SW¼	36	24	40	560
	16	24	41	640
	16	24	42	640
	36	24	42	640
	16	24	43	640
SW¼	36	24	43	160

Sec.	T. N.	R. E.	S.B.M. Acres
16	20	4	640
16	20	7	640

INYO COUNTY—Continued.

	Sec.	T. N.	R. E.	S.B.M. Acres
Lot 1	16	20	12	0.26
	36	21	1	640
	16	21	2	640
	16	21	3	640
	36	21	3	640
	16	21	4	640
	16	21	5	640
	36	21	5	640
	16	21	6	640
	36	21	7	640
	16	21	8	640
	36	21	8	640
	16	21	9	640
	36	21	9	640
	36	21	10	640
Lot 1	16	21	11	1.46
Lot 1	36	21	11	1.60
	16	22	1	640
	36	22	1	640
	16	22	2	640
	36	22	2	640
	16	22	4	640
	36	22	4	640
	16	22	5	640
	36	22	5	640
	16	22	6	640
W½ and W½ of E½	36	22	6	480
	16	22	7	640
W½ and SE¼	36	22	7	480
	16	22	8	640
	36	22	8	640
	36	22	9	640
Lot 1	16	22	10	5.22
Lot 1	36	22	10	5.11
	16	23	1	640
	36	23	1	640
	16	23	2	640
	36	23	2	640
SE¼	16	23	3	160
NE¼	36	23	3	160
	16	23	4	640
	36	23	4	640
	16	23	5	640
	36	23	5	640
	16	23	6	640
	16	23	7	640
	36	23	7	640
	16	23	8	640
	36	23	8	640
Lot 1	16	23	9	5.99
Lot 1	36	23	9	4.87
N½ and SW¼	16	24	1	480
N½, SW¼, NW¼ of SE¼	36	24	1	520
N½, SW¼, N½ of SE¼, SW¼ of SE¼	16	24	2	600
W½, NE¼, S½ of SE¼	36	24	2	560
	36	24	3	640
	16	24	4	640
	36	24	4	640
	16	24	5	640
	36	24	5	640
	16	24	6	640
	36	24	6	640

INYO COUNTY—Continued.

	Sec.	T. N.	R. E.	S.B.M. Acres
	16	24	7	640
	36	24	7	640
Lots 2, 3, 4, 9 and S½ of SW¼	16	24	8	180.80
Lots 4, 5, 8, 12, 14, 15, 17, W½ of SW¼ and SE¼ of SW¼	36	24	8	256.07
	16	25	1	640
	36	25	1	640
S½ and SE¼ of NE¼	16	25	2	360
	36	25	2	640
	36	25	3	640
	16	25	4	640
	36	25	4	640
	16	25	5	640
	36	25	5	640
N½, SE¼, N½ of SW¼, SE¼ of SW¼	16	25	6	600
	36	25	6	640
Lots 3, 4, and SW¼ of SW¼	16	25	7	84.07
Lots 2, 3, 6, 8, 10, SW¼ of SW¼	36	25	7	136.23
W½, SE¼, W½ of NE¼, SE¼ of NE¼	16	26	1	600
	36	26	1	640
	16	26	3	640
	36	26	3	640
	16	26	4	640
	36	26	4	640
	16	26	5	640
	36	26	5	640
W½ of NW¼	36	27	1	80
	16	27	2	640
	36	27	2	640
S½	36	27	3	320
	16	27	4	640
	36	27	4	640
	16	28	1	640
NW¼ of NW¼, E½ of NE¼, NE¼ of SE¼, S½ of S½	36	28	1	320
S½	36	28	2	320
E½	36	28	3	320
	16	29	1	640
	36	29	1	640
NE¼	16	29	2	160
Total				151,882.19

KERN COUNTY.

	Sec.	T. S.	R. E.	M.D.M. Acres
NW¼ and W½ of SW¼	36	25	34	240
E½ of NE¼, NW¼ of NE¼, W½ of SE¼	16	25	38	200
S½	36	26	30	320
SW¼ of NW¼	16	27	35	40
E½	16	27	37	320
S½ and NE¼	16	27	38	480
*NW¼	16	28	31	160
NW¼	36	28	32	160
NW¼ of NE¼, E½ of NW¼, SW¼ of NW¼	16	29	32	160
	36	29	32	640
SE¼ of NE¼, S½ of SE¼, N½ of NW¼	16	29	33	200
E½, SW¼ and E½ of NW¼	36	29	33	560
*N½ of NW¼, SW¼ of NW¼, NW¼ of SW¼	16	29	34	160
	36	29	34	640
W½, SE¼, SW¼ of NE¼	36	29	35	520

*Signifies that the lands are located within the exterior boundaries of a national forest.

KERN COUNTY—Continued.

	Sec.	T. S.	R. E.	M.D.M. Acres
NE¼ and SW¼	36	29	36	320
	16	29	38	640
E½ of NE¼, NE¼ of SE¼	36	29	38	120
NW¼, N½ of SE¼, SW¼ of SE¼	16	29	39	280
	36	29	39	640
	16	29	40	640
N½ of NE¼, SE¼ of NE¼, NE¼ of SE¼, S½ of SE¼, S½ of SW¼	36	30	32	320
	16	30	34	640
E½ of NE¼, N½ of SE¼	16	30	35	160
	36	30	35	640
W½, SE¼, S½ of NE¼, NW¼ of NE¼	16	30	36	600
E½	36	30	36	320
NE¼	36	30	39	160
Lots 1 and 2	16	31	33	78.99
E½, E½ of NW¼, NW¼ of NW¼, NE¼ of SW¼	36	31	33	480
NW¼	16	31	34	160
	36	31	34	662.82
NW¼	16	31	35	160
	36	31	35	644.32
NE¼, E½ of NW¼, N½ of S½	16	31	36	400
NE¼ of SE¼, NE¼ of NE¼	12	32	32	80
	16	32	35	640

	Sec.	T. N.	R. W.	S.B.M. Acres
Lots 1, 2, 3, 4, S½ of SE¼, S½ of SW¼	16	9	15	322.80
NE¼ of SW¼	34	9	19	40
SE¼ of SE¼	36	10	9	40
NW¼ of SW¼	36	10	13	40
Lot 1	36	10	17	33.56
S½ of NE¼	16	11	9	80
SE¼ of SW¼, S½ of SE¼	16	11	16	120
NE¼ of NW¼, NW¼ of NE¼	36	11	16	80
Total				14,342.49

KINGS COUNTY.

No vacant lands.

LAKE COUNTY.

	Sec.	T. N.	R. W.	M.D.M. Acres
N½ and SW¼	16	11	5	480
NE¼ of SW¼	16	11	8	40
Lots 1, 2, 3, 4	36	11	8	172.76
Lots 2, 3, 4, SW¼, SE¼ of NW¼, SW¼ of NE¼, W½ of SE¼	36	12	6	394.76
W½ of W½, NW¼ of NE¼, S½ of NE¼, SE¼	16	12	8	440
	16	12	9	640
NE¼ and N½ of SE¼	36	12	9	240
W½ of NW¼ and SW¼	16	13	5	240
W½ of SE¼	19	13	5	80
SW¼ of NW¼, NW¼ of SW¼	27	13	5	80
SE¼ and N½ of SW¼	28	13	5	160
NW¼, W½ of NE¼, NE¼ of NE¼	29	13	5	280
N½ of NE¼	30	13	5	80
NW¼ of SW¼	12	13	6	40
NE¼ of NW¼	15	13	6	40
SE¼ of NE¼	20	13	6	40
Lot 1	24	13	6	29.37
SE¼ of SE¼	31	13	6	40

LAKE COUNTY—Continued.

	Sec.	T. N.	R. W.	M.D.M. Acres
SE¼ of NE¼	32	13	6	40
W½, W½ of E½, Lots 1 and 2	36	13	6	529.62
S½	16	14	7	320
	16	15	7	640
	36	15	7	640
*Lots 4, 7, 23, 25, E½ of SE¼	16	15	8	142.08
Lots 1, 2, 6, 7	36	15	8	162.98
	36	15	11	288.72
*NE¼ of NW¼	36	16	7	40
*W½ and SE¼	36	16	8	240
*NE¼ of NE¼	36	17	9	40
	*16	17	10	640
*W½ of SE¼	36	17	10	80
*W½ of NW¼	16	18	10	80
*NE¼ of SW¼, NW¼ of SE¼	16	19	9	80
*SW¼, NW¼ of SE¼, NE¼ of NE¼	16	19	10	240
*SW¼ of NW¼, E½ of NW¼, W½ of NE¼, SE¼ of NE¼, SW¼, W½ of SE¼, NE¼ of SE¼	36	19	10	520
Total				8,240.29

LASSEN COUNTY.

	Sec.	T. N.	R. E.	M.D.M. Acres
E½, NW¼ of SW¼, S½ of NW¼, NE¼ of NW¼	16	22	17	480
	36	22	17	701.64
	36	23	17	618.52
NW¼ of SW¼, W½ of NW¼, NE¼ of NW¼, NW¼ of NE¼, W½ of SE¼, Lots 1, 2, 3, 4	36	24	17	428.70
*E½, N½ of NW¼, N½ of SW¼, SE¼ of SW¼	36	25	16	520
E½ of NE¼	16	25	17	80
NE¼ of NW¼, W½ of NE¼, Lots 1, 2, 3	36	25	17	224.07
SE¼ of SW¼	24	26	16	40
N½	26	26	16	320
N½	27	26	16	320
SE¼ of NE¼	34	26	16	40
SW¼, W½ of SE¼, NE¼ of SE¼, S½ of NE¼, S½ of NW¼, Lots 1, 2, 3, 4	4	26	17	599.36
	5	26	17	640.22
SE¼, S½ of NE¼, SE¼ of NW¼, E½ of SW¼, Lots 1, 2, 3, 4, 5, 6	6	26	17	608.42
NW¼, Lots 4, 5, 6	11	26	17	400
W½ of NW¼, W½ of SW¼	12	26	17	160
NW¼ of NW¼	13	26	17	40
NW¼ of NE¼	16	26	17	40
Lot 3	19	26	17	40.65
NW¼, N½ of SW¼, NW¼ of SE¼, Lots 3, 4, 5, 6, 7	36	26	17	423.06
N½, SE¼, N½ of SW¼, SW¼ of SW¼	4	27	16	600
NE¼ and NW¼ of NW¼	9	27	16	200
W½, NE¼, W½ of SE¼, NE¼ of SE¼	11	27	16	600
W½, NE¼, W½ of SE¼, NE¼ of SE¼	12	27	16	600
	13	27	16	640
NE¼ of SW¼, SE¼ of NW¼, NW¼ of NW¼, Lot 1	15	27	16	159.90
Lot 6	16	27	16	0.18
	18	27	16	635.32
NE¼	22	27	16	160
	24	27	16	640
	28	27	16	640
SE¼	33	27	16	160

*Signifies that the lands are located within the exterior boundaries of a national forest.

LASSEN COUNTY—Continued.

	Sec.	T. N.	R. E.	M.D.M. Acres
E½ and E½ of SW¼	35	27	16	400
Lots 1, 2, 3, 4, 5, 6, 7	6	27	17	282.31
Lots 7 and 8	14	27	17	101.33
	19	27	17	648.80
	20	27	17	640
S½	21	27	17	320
SE¼	22	27	17	160
SW¼, Lots 1, 2, 7, 8	23	27	17	361.98
W½, Lots 1, 2, 4, 5, 7, 8	26	27	17	682.40
SW¼ and SW¼ of NW¼	27	27	17	200
	28	27	17	640
W½, N½ of NE¼, S½ of SE¼	29	27	17	480
Lot 4	30	27	17	43.50
	31	27	17	655.58
	32	27	17	640
	33	27	17	640
E½	34	27	17	320
W½	35	27	17	320
N½, SE¼, W½ of SW¼	9	28	16	560
	16	28	17	640
Lots 3 and 4	19	28	17	77.29
W½ of NW¼, SW¼ of NE¼	27	28	17	120
	31	28	17	638.40
W½	32	28	17	320
	36	29	13	640
N½	16	29	16	320
	36	29	16	640
	16	29	17	640
	36	29	17	819.80
*W½, SE¼, W½ of NE¼, SE¼ of NE¼	16	30	7	600
N½ of NE¼	16	30	9	80
S½ of NW¼, NE¼ of NW¼, W½ of NE¼, SE¼ of NE¼, N½ of SE¼, SW¼ of SE¼, E½ of SW¼, NW¼ of SW¼	36	30	14	480
S½ of NW¼, NE¼ of NW¼, W½ of NE¼, SE¼ of NE¼, N½ of SE¼, SW¼ of SE¼, E½ of SW¼, NW¼ of SW¼	36	30	15	480
	16	30	16	640
	36	30	16	640
	16	30	17	640
	36	30	17	822.28
*SW¼ of NW¼	36	31	6	40
*NE¼ of NE¼, S½ of NE¼, SE¼	16	31	7	280
W½ of NW¼, W½ of SW¼	16	31	11	160
	36	31	13	561.32
	16	31	14	640
N½, N½ of SE¼, N½ of SW¼	36	31	14	480
	16	31	16	640
N½	36	31	16	320
	16	31	17	640
W½, Lots 1, 2, 3, 4	36	31	17	429.52
*W½ of SE¼	36	32	9	80
	16	32	13	640
S½ of NW¼, NE¼ of NW¼, W½ of NE¼, SE¼ of NE¼, N½ of SE¼, SW¼ of SE¼, E½ of SW¼, NW¼ of SW¼	36	32	13	480
	36	32	15	640
NE¼, E½ of SE¼, SW¼, W½ of NW¼, NE¼ of NW¼	16	32	16	520
	36	32	16	640
	16	32	17	640
W½, Lots 1, 2, 3, 4	36	32	17	432.54
	16	33	13	640
	36	33	14	640

*Signifies that the lands are located within the exterior boundaries of a national forest.

LASSEN COUNTY—Continued.

	Sec.	T. N.	R. E.	M.D.M. Acres
E½	16	33	15	320
	36	33	15	640
	16	33	17	640
W½, Lots 1, 2, 3, 4	36	33	17	420.70
*NE¼ of NW¼, S½ of NW¼	36	34	6	120
*NW¼ of NW¼	16	34	8	40
	36	34	13	640
N½	36	34	16	320
	16	34	17	640
W½, Lots 1, 2, 3, 4	36	34	17	397.16
	36	35	8	640
S½, S½ of NE¼, NE¼ of NE¼	16	35	9	440
SE¼ of SE¼	22	35	10	40
S½ of NW¼	23	35	10	80
E½	36	35	11	320
NW¼ of NW¼	36	35	14	40
SE¼ of SE¼	36	35	15	40
W½, Lots 1, 2, 3, 4	36	35	17	397.92
	36	36	6	640
	36	36	7	640
	*16	36	8	640
	36	36	8	640
	36	36	10	640
W½, W½ of NE¼, W½ of SE¼	36	36	11	480
NE¼	16	36	12	160
N½ of NW¼	16	36	15	80
W½ and W½ of NE¼	36	36	15	400
NW¼ of NW¼	16	36	16	40
NE¼ of NE¼, SE¼, SE¼ of SW¼	36	36	16	240
NE¼ of NW¼, NW¼ of NE¼	28	37	7	80
*W½ of NW¼, SE¼ of NW¼, SW¼, SW¼ of SE¼	36	37	10	320
SE¼, SE¼ of NW¼, SW¼ of NE¼, E½ of SW¼	16	37	14	320
	36	37	15	640
E½ of NW¼, NE¼ of NE¼, SW¼ of NE¼, SE¼ of SE¼, NE¼ of SW¼	16	37	16	240
S½ and N½ of NW¼	36	37	16	400
	16	37	17	640
*W½ of NW¼, E½ of NE¼, N½ of SE¼, SW¼ of SE¼, NE¼ of SW¼ and S½ of SW¼	36	38	8	400
SE¼	16	38	9	160
S½	36	38	9	320
Lots 2, 3, 6, 7, 10, 11, 12, 13, 14	36	38	10	355.48
N½, SE¼, E½ of SW¼	16	38	13	560
W½ and N½ of NE¼	16	38	14	400
S½ of SE¼, SE¼ of NW¼, NE¼ of SW¼	19	38	14	160
NE¼ of NE¼	30	38	14	40
SE¼ of NW¼, SW¼ of NE¼, W½ of SE¼, SW¼	36	38	15	320
NW¼, N½ of NE¼, E½ of SE¼, W½ of SW¼, NE¼ of SW¼	16	38	17	440
*NE¼ of NW¼, NE¼, NE¼ of SE¼	36	39	10	240
*SW¼ of NE¼, E½ of SW¼	36	39	11	120
N½ of NE¼, SE¼ of NE¼, NE¼ of SE¼	36	39	12	160
Total				55,728.35

LOS ANGELES COUNTY.

	Sec.	T. N.	R. W.	S.B.M. Acres
*SE¼ of NE¼	36	2	9	40
*N½ of SW¼, SE¼ of SW¼	36	2	11	120

*Signifies that the lands are located within the exterior boundaries of a national forest.

LOS ANGELES COUNTY—Continued.

	Sec.	T. N.	R. W.	S.B.M. Acres
W½ of SW¼	36	3	17	80
N½, SE¼, S½ of SW¼	16	4	8	560
Lots 1 and 2	16	4	9	34.17
NE¼ of SE¼	36	4	15	40
	36	6	8	640
NW¼ of NE¼, S½ of NE¼, SE¼	16	7	9	280
SE¼	16	8	8	160
Total				1,954.17

MADERA COUNTY.

	Sec.	T. S.	R. E.	M.D.M. Acres
S½	36	9	19	320

MARIN COUNTY.

No vacant lands.

MARIPOSA COUNTY.

	Sec.	T. S.	R. E.	M.D.M. Acres
SW¼ of SW¼	36	3	16	40
NE¼ of NE¼, SE¼ of SE¼	16	3	17	80
Total				120

MENDOCINO COUNTY.

	Sec.	T. N.	R. W.	M.D.M. Acres
N½ of SW¼, Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	16	12	10	490.96
W½ of NW¼	36	13	12	80
E½	16	14	13	320
E½ of NW¼, NE¼, NE¼ of SE¼	36	15	13	280
S½ of SE¼	36	16	12	80
SW¼, W½ of SE¼, SE¼ of SE¼	36	17	12	280
W½	16	18	11	320
S½ of N½, NE¼ of NW¼, W½ of SW¼	16	18	12	280
SW¼ of SW¼	36	18	12	40
S½ of Lot 5	36	18	13	40
N½ of NE¼	16	19	13	80
*S½ and W½ of NW¼	36	20	10	400
*Lot 6	36	20	12	40
E½	36	20	13	320
*W½ of W½	36	21	10	160
	16	21	11	640
N½ of SW¼	36	21	12	80
NW¼ of SE¼	16	21	13	40
SE¼ of NE¼, N½ of SE¼	16	21	14	120
*E½, E½ of SW¼, NW¼ of SW¼	16	22	10	440
	16	22	13	640
*NW¼, W½ of NE¼, NW¼ of SE¼, N½ of SW¼	16	23	10	360
N½, N½ of SE¼, SE¼ of SE¼, NW¼ of SW¼	16	23	11	480
N½ of NW¼, N½ of SW¼, SE¼ of SW¼	25	23	15	200
NE¼ of NE¼, NE¼ of SE¼	26	23	15	80
Lot 8 and SW¼ of SE¼	27	23	15	79.90
Lots 2, 3, 7	34	23	15	117.70
Lots 1, 2, N½ of NE¼	36	23	15	110.08
SW¼ of NW¼, E½ of NE¼	16	23	16	120
*N½ and SE¼	36	24	11	480

*Signifies that the lands are located within the exterior boundaries of a national forest.

MENDOCINO COUNTY—Continued.

	Sec.	T. N.	R. W.	M.D.M. Acres
*SW¼ and NW¼ of SE¼	16	24	12	200
Lot 5	16	24	17	51.04
Lots 1, 2, 3, 4, N½ of N½	36	24	17	242.38
*SE¼, S½ of NE¼, NE¼ of NE¼	36	25	12	280
SW¼, S½ of NW¼, NW¼ of NW¼	36	25	12	280

	Sec.	T. S.	R. E.	H.M. Acres
SW¼ of SW¼, S½ of SE¼	36	5	3	120
S½ of NW¼, SW¼, W½ of SE¼	36	5	4	320
NE¼, E½ of SE¼, S½ of SW¼, SE¼ of NW¼, NW¼ of NW¼	36	5	5	400
NW¼ of NW¼, SW¼ of SW¼, Lots 1, 2, 3, 4, 5, 6	36	5	7	243.79
Total				9,335.85

MERCED COUNTY.

	Sec.	T. S.	R. E.	M.D.M. Acres
Lots 2 and 3	16	11	8	20.60
Lot 3	7	13	9	38.09
Total				58.69

MODOC COUNTY.

	Sec.	T. N.	R. E.	M.D.M. Acres
SW¼ of NW¼ and SW¼	16	39	5	200
*SE¼ of NE¼, NE¼ of SE¼	16	39	14	80
E½ of E½	36	39	16	160
*NE¼, W½ of SE¼, E½ of SW¼	16	40	7	320
SW¼ of NE¼	27	40	7	40
*N½ of NW¼, NW¼ of NE¼	16	40	8	120
*S½ and W½ of NW¼	16	40	10	400
N½, SW¼, N½ of SE¼, SE¼ of SE¼	16	40	11	600
	16	40	12	640
	16	40	13	640
	36	40	13	640
*S½ and NE¼	16	40	14	480
*W½ of NW¼, SE¼ of NE¼, SE¼ of SW¼, SE¼	16	40	15	320
	16	40	17	640
Lots 1, 2, 3, 4	36	40	17	5.42
	*16	41	8	640
*SW¼, S½ of SE¼, E½ of NE¼, SW¼ of NW¼	16	41	9	360
N½, N½ of S½, SW¼ of SW¼, SE¼ of SE¼	36	41	9	560
NE¼ of NE¼	36	41	10	40
NE¼ of SW¼ and SE¼	36	41	11	200
	16	41	12	640
*S½, NE¼, S½ of NW¼	36	41	14	560
W½ of NW¼, SE¼ of NW¼, W½ of SW¼, SE¼ of SW¼	16	41	16	240
NE¼	16	41	17	160
Lots 1, 2, 3, 4	36	41	17	25.98
	*36	42	8	640
*NE¼, NE¼ of SE¼, N½ of NW¼	16	42	9	200
NW¼ of NW¼	36	42	9	40
NE¼ of SE¼	36	42	12	40
*W½ of SE¼	16	42	15	80
	16	42	17	640

*Signifies that the lands are located within the exterior boundaries of a national forest.

MODOC COUNTY—Continued.

	Sec.	T. N.	R. E.	M.D.M. Acres
Lots 1, 2, 3, 4	36	42	17	47.20
	*16	43	6	640
	*36	43	6	640
	*36	43	9	640
*SE¼ of NW¼, E½ of SW¼, SE¼ of NE¼, SE¼	36	43	10	320
*N½ of NW¼, SE¼ of NW¼, NE¼, NE¼ of SE¼	16	43	12	320
*N½, SW¼, N½ of SE¼	16	43	13	560
SE¼ of SE¼	36	43	13	40
*NW¼ of NW¼, SW¼ of SW¼, E½ of SW¼, SE¼	36	43	14	320
Lot 1	16	43	16	22.57
Lots 1, 2, 3, 4, E½ of E½	36	43	16	242.82
	16	43	17	640
*N½, N½ of SE¼, N½ of SW¼	16	44	6	480
*E½ and NE¼ of SW¼	16	44	9	360
	*36	44	10	640
	16	44	13	640
S½ and W½ of NW¼	36	44	13	400
*W½ of NW¼	16	44	15	80
	16	44	17	640
*N½ of N½ and S½	16	45	7	480
*E½ of NW¼, W½ of NE¼, SE¼ of NE¼, N½ of SE¼	16	45	10	280
	*36	45	10	640
S½	36	45	15	320
Lots 1, 2, 3, SW¼ of SW¼, E½ of SW¼, E½	36	45	16	543.85
	16	45	17	640
*S½ of N½	16	46	6	160
	*36	46	6	640
	*36	46	8	640
*NW¼, W½ of NE¼, SE¼, NE¼ of SW¼, SW¼ of SW¼	16	46	9	480
*W½ of NW¼, NE¼ of SE¼	36	46	9	120
*S½ of SE¼	16	46	10	80
*E½ of SW¼, W½ of SE¼, NE¼ of SE¼	16	46	11	200
*W½ of NW¼, NE¼ of NW¼	36	46	11	120
*S½ of SW¼	16	46	12	80
	*36	46	12	640
*SW¼ of SW¼	16	46	13	40
*W½ and SW¼ of NE¼	36	46	15	360
	16	46	17	640
*W½, SE¼, W½ of NE¼, SE¼ of NE¼	36	47	6	600
NE¼ of NE¼	36	47	6	40
Lot 2	7	47	10	30.05
	*36	47	11	640
*SE¼ of SE¼	36	47	15	40
E½ and NW¼ of NW¼	16	47	17	359.15
	*36	48	6	640
*Lots 1, 2, 3, 4	16	48	7	163.58
*E½, NE¼ of NW¼, SE¼ of SW¼, W½ of W½	36	48	7	560
*Lots 1, 2, 3, 4	16	48	8	73.96
*N½ of NW¼	36	48	10	80
Total				28,354.58

MONO COUNTY.

	Sec.	T. N.	R. E.	M.D.M. Acres
Lot 1	3	1	26	17.32
S½ of NE¼, SE¼	16	1	26	240
*NW¼ of NW¼	16	1	26	40
	16	1	29	640
	36	1	29	640

*Signifies that the lands are located within the exterior boundaries of a national forest.

MONO COUNTY—Continued.

	Sec.	T. N.	R. E.	M.D.M. Acres
E½ of SE¼	16	1	30	80
	36	1	30	640
E½, SW¼, S½ of NW¼	36	1	31	560
NE¼ of NE¼	7	2	25	40
NW¼ and W½ of NW¼, NE¼, S½	36	2	28	600
N½ of SE¼, NE¼, W½	36	3	25	560
N½ and SE¼	16	3	26	480
NE¼	36	3	27	160
W½ and SE¼	16	3	28	480
W½ of SW¼, NE¼ of SW¼	36	3	28	120
NW¼ of NE¼, S½ of NE¼, E½ of SW¼, SE¼	16	3	29	360
W½ of SW¼, SE¼ of SW¼, SW¼ of SE¼	4	4	24	160
S½ of SW¼, S½ of SE¼, NE¼ of SE¼	5	4	24	200
W½ of NW¼, NE¼	8	4	24	240
NW¼	9	4	24	160
SE¼	36	4	24	160
E½ of NW¼ and NE¼	16	4	25	240
W½, SE¼, N½ of NE¼, SW¼ of NE¼	36	4	25	600
E½, E½ of NW¼, SW¼ of NW¼, NE¼ of SW¼	16	4	26	480
	36	4	26	640
	36	4	27	640
	16	4	28	640
	36	4	28	640
Lot 3	4	5	25	29.90
	36	5	25	640
	16	5	26	640
N½, W½ of SW¼, NE¼ of SW¼, NW¼ of SE¼	36	5	26	480
E½ and SW¼	16	5	27	480
S½	36	5	27	320
*E½ of E½, NW¼ of SW¼, SE¼ of SW¼	16	6	24	240
SE¼ of SE¼	33	6	25	40
SW¼ of SW¼	34	6	25	40
W½, NE¼, N½ of SE¼, SW¼ of SE¼	36	6	26	600
*SW¼ of SE¼	36	7	23	40
	*36	7	24	640
W½ of NE¼	36	8	22	80
NE¼ of NW¼, SE¼ of SW¼	30	8	23	80
E½, E½ of NW¼	16	9	22	400
*NE¼ of SW¼, SW¼ of SE¼	36	9	23	80

	Sec.	T. S.	R. E.	M.D.M. Acres
*SE¼ of NE¼, NE¼ of SE¼	36	1	27	80
*S½	36	1	29	320
	16	1	31	640
SE¼ of SW¼, W½ of SE¼, NW¼ of NW¼	36	1	31	160
N½ of N½, S½ of SE¼, NE¼ of SE¼, NW¼ of SW¼, S½ of SW¼	16	1	32	400
N½ of NW¼, W½ of NE¼, SE¼ of NE¼	33	2	27	200
*E½ of SW¼, NW¼ of SE¼	16	2	28	120
	16	2	31	640
	36	2	31	640
	16	2	32	640
	36	2	32	640
*Lot 1	16	2	34	15.23
	36	3	28	640
S½ of NE¼	36	3	29	80
S½ of SW¼	36	3	31	80
	16	3	32	640
*Lots 1, 2, 3, 4, 5, SW¼ of SW¼	16	3	35	148.12

*Signifies that the lands are located within the exterior boundaries of a national forest.

MONO COUNTY—Continued.

	Sec.	T. S.	R. E.	M.D.M. Acres
Lots 1, 2, 3, 4, 5, 6, 7, W½ of SW¼, SE¼ of SW¼	36	3	35	269.34
*NW¼ of NE¼	16	4	27	40
W½ of NE¼	36	4	29	80
*SW¼ of NW¼, S½ of SW¼	36	4	30	120
	36	4	31	640
	16	4	32	640
	36	4	32	640
W½	16	5	31	320
	36	5	31	640
W½ of W½, E½ of SW¼, NW¼ of NE¼, E½ of E½	16	5	32	440
W½, W½ of SE¼, SW¼ of NE¼	36	5	32	440
*SE¼ of SE¼	16	5	36	40
	36	5	36	640
	36	5	37	640
Total				26,959.91

MONTEREY COUNTY.

	Sec.	T. S.	R. E.	M.D.M. Acres
Part Lot 1	13	17	1	6.56
*S½ of SW¼	36	18	2	80
E½	16	18	3	320
*N½, N½ of SW¼, NW¼ of SE¼	36	18	3	440
NW¼	36	18	5	160
SE¼ of SE¼	36	19	5	40
NE¼ of NE¼, Lot 1	36	19	6	82.27
N½, SE¼, E½ of SW¼	36	20	6	560
*NW¼ of NE¼	16	21	5	40
SW¼ of NE¼	36	21	5	40
	16	21	6	585.92
N½, SE¼, N½ of SW¼	16	21	7	560
Lot 1, NE¼ of NW¼, NW¼ of NE¼, SE¼ of SE¼	18	22	14	165.21
*N½ and SE¼	36	23	5	480
*E½ of SW¼, SW¼ of SE¼	16	23	6	120
Lot 4	36	23	8	17.38
NE¼	36	24	6	160
NE¼ of NE¼, SW¼ of SE¼, E½ of SW¼	36	24	7	160
Total				4,017.34

NAPA COUNTY.

	Sec.	T. N.	R. W.	M.D.M. Acres
SE¼ of NW¼, E½ of SW¼	5	6	2	120
NW¼ of SE¼, NE¼ of SW¼, E½ of NW¼	8	6	2	160
SW¼ and W½ of SE¼	9	6	2	240
NE¼ of NW¼, SW¼ of NE¼	16	6	2	80
N½ of NW¼, NW¼ of NE¼, N½ of SE¼	36	8	3	200
W½ of W½, E½ of E½	36	9	3	320
NE¼ of NW¼, SW¼ of NW¼, N½ of NE¼, SE¼ of NE¼, N½ of SE¼, SW¼ of SE¼, SW¼	16	9	6	480
Lots 1, 14, 15, 16, 17	33	10	6	88.59
SW¼ of NE¼, NW¼ of SE¼	16	11	4	80
NE¼ of NE¼	36	11	5	40
Total				1,808.59

*Signifies that the lands are located within the exterior boundaries of a national forest.

NEVADA COUNTY.

	Sec.	T. N.	R. E.	M.D.M. Acres
Lots 1, 2, SE¼ of NW¼, SW¼	36	16	9	217.39
*Lot 6, NE¼ of NW¼	16	17	11	76.54
*NW¼ of SW¼	16	17	13	40
*S½ of SE¼	16	18	12	80
*N½, N½ of SW¼, SE¼ of SW¼	36	18	14	440
NE¼	36	18	16	160
Total				1,013.93

ORANGE COUNTY.

No vacant lands.

PLACER COUNTY.

	Sec.	T. N.	R. E.	M.D.M. Acres
*W½ of NW¼	16	14	15	80
*W½ of NE¼	16	15	13	80
*SW¼ of NW¼	36	15	14	40
*SW¼ of SE¼	16	15	15	40
*NW¼ and NW¼ of NE¼	36	16	11	200
*N½ of NE¼	36	17	15	80
Total				520

PLUMAS COUNTY.

	Sec.	T. N.	R. E.	M.D.M. Acres
*N½ and W½ of SW¼	16	22	9	400
*NW¼	16	22	14	160
*NW¼ of NE¼, SE¼	16	23	8	200
*NE¼, SW¼, S½ of NW¼, NW¼ of NW¼	36	23	8	440
E½ of NE¼	16	23	15	80
*N½	36	24	15	320
*W½ of W½	36	25	5	160
*SE¼ of SW¼, SW¼ of NW¼, E½ of NW¼, NW¼ of NE¼	16	25	11	200
*E½ of NW¼, NW¼ of NE¼, E½ of NE¼	16	25	12	200
*N½, N½ of SW¼, SE¼ of SW¼, NW¼ of SE¼, S½ of SE¼	16	25	14	560
*NE¼, E½ of SE¼, SW¼ of SE¼, SW¼ of SW¼, NW¼ of NW¼, E½ of NW¼	36	25	14	440
	*16	25	15	640
*SE¼ of SE¼	36	26	11	40
*SW¼ of SE¼	16	26	12	40
*E½ of NW¼, SW¼ of NW¼	36	26	13	120
	*36	26	14	640
*W½, SW¼ of NE¼, W½ of SE¼	36	26	15	440
*Lots 1, 2, 3, 4	36	27	5	99.04
*SW¼ of NW¼, NE¼ of SW¼, W½ of SE¼	16	27	9	160
	*36	27	11	640
Total				5,979.04

RIVERSIDE COUNTY.

Sec.	T. S.	R. E.	S.B.M. Acres
16	2	5	640
36	2	5	640
16	2	6	640
36	2	6	640
16	2	7	640
36	2	7	640
36	2	8	640

*Signifies that the lands are located within the exterior boundaries of a national forest.

RIVERSIDE COUNTY—Continued.

	Sec.	T. S.	R. E.	S.B.M. Acres
S½	16	2	9	320
	36	2	12	640
	16	2	13	640
	36	2	13	640
	36	2	14	640
SE¼	16	2	16	160
	36	2	16	640
	16	2	17	640
	36	2	17	640
E½	36	2	18	320
N½, N½ of SW¼, S½ of SE¼	16	3	3	480
	36	3	5	640
	16	3	6	640
	36	3	6	640
	16	3	7	640
	36	3	7	640
	16	3	8	640
	36	3	8	615.60
	36	3	9	622.27
	16	3	10	640
	16	3	11	640
	36	3	11	640
	16	3	12	640
NW¼	36	3	12	160
S½	16	3	15	320
	36	3	15	640
E½	16	3	16	320
	36	3	16	640
NW¼	16	3	22	160
	36	4	7	640
	16	4	8	640
	36	4	8	640
	16	4	9	640
	36	4	9	640
	16	4	10	640
	36	4	10	640
E½	16	4	15	320
SW¼	16	4	16	160
	16	5	9	640
	36	5	9	640
	16	5	10	640
	36	5	10	640
	16	5	11	640
	36	5	11	640
	16	5	12	640
	36	5	12	640
	16	5	16	640
NW¼, W½ of NE¼, W½ of SE¼, Lots 1, 2, 3, 4	16	5	23	465.14
SE¼	16	6	5	160
SW¼	36	6	5	160
N½ and SE¼	16	6	9	480
SW¼, E½ of NW¼, NE¼, E½ of SE¼	16	6	10	480
N½ of SW¼, NE¼ of NW¼, NE¼, NW¼ of SE¼	36	6	10	320
	16	6	11	640
	36	6	11	640
	16	6	12	640
	36	6	12	640
	16	6	13	640
	36	6	13	637.84
	16	6	21	617.33
	16	7	13	640
	36	7	13	640

RIVERSIDE COUNTY—Continued.

	Sec.	T. S.	R. E.	S.B.M. Acres
W½, NE¼, W½ of SE¼	16	7	14	560
	16	8	5	640
N½, N½ of SE¼, Lots 1 and 2	36	8	5	480.76
W½ of SE¼	16	8	6	80
N½ and S½ of SE¼	36	8	12	400
	16	8	13	640
	36	8	13	640
	16	8	14	640
	36	8	14	640
	16	8	15	640
	36	8	15	640
	16	8	16	640
	36	8	16	640

	Sec.	T. S.	R. W.	S.B.M. Acres
*W½ of SE¼, SE¼ of SE¼	36	6	5	120
NW¼	36	8	3	160
Total				46,198.94

SACRAMENTO COUNTY.

No vacant lands.

SAN BENITO COUNTY.

	Sec.	T. S.	R. E.	M.D.M. Acres
Lots 4 and 5	16	14	5	83.02
NE¼	16	18	11	160
SW¼ of SE¼	36	18	11	40
SW¼	16	18	12	160
Total				443.02

SAN BERNARDINO COUNTY.

	Sec.	T. N.	R. E.	S.B.M. Acres
	16	1	8	640
	36	1	10	640
	16	1	11	640
	36	1	11	640
	36	1	12	640
	16	1	16	640
	36	1	16	640
N½	16	1	22	320
	16	1	24	640
N½ and SE¼	36	2	5	480
	16	2	6	640
	36	2	6	640
W½ and SE¼	36	2	7	480
	16	2	9	640
	36	2	9	640
	16	2	10	640
S½	36	2	11	320
	16	2	12	640
	16	2	13	640
	36	2	13	640
	16	2	14	640
NE¼	36	2	14	160

*Signifies that the lands are located within the exterior boundaries of a national forest.

SAN BERNARDINO COUNTY—Continued.

	Sec.	T. N.	R. E.	S.B.M. Acres
W½, SE¼, S½ of NE¼, NW¼ of NE¼	16	2	15	600
W½ and SE¼	36	2	15	480
	36	2	17	640
N½, SW¼ of SW¼, SW¼ of SE¼	16	2	18	400
S½	36	2	18	320
	16	2	19	640
	16	2	22	640
	36	2	22	640
*W½ of SE¼	36	3	1	80
	16	3	5	640
S½	36	3	5	320
	36	3	6	640
S½	36	3	7	320
	16	3	8	640
SW¼	36	3	8	160
	16	3	9	640
	16	3	10	640
	36	3	10	638.84
	16	3	11	640
	36	3	11	640
	16	3	12	640
	36	3	12	640
N½	16	3	13	320
E½	36	3	13	320
	16	3	15	640
E½	36	3	15	320
W½	16	3	16	320
W½	36	3	16	320
	16	3	17	729.76
	36	3	18	640
	16	3	19	640
	16	3	22	640
	16	3	25	640
	36	3	25	640
	36	4	1	640
NW¼, SE¼ of SW¼, N½ of SW¼, N½ of SE¼	36	4	3	360
N½ and SE¼	16	4	4	480
W½	36	4	4	320
	16	4	6	640
SW¼	36	4	6	160
	16	4	7	640
	36	4	7	640
	16	4	8	640
	36	4	8	640
	16	4	9	640
	36	4	9	640
	16	4	10	640
	36	4	10	640
	16	4	11	640
	36	4	11	640
	16	4	12	640
	16	4	13	640
	36	4	13	640
	16	4	14	640
S½	36	4	14	320
	36	4	15	640
	36	4	16	640
	16	4	17	640
	36	4	17	640
	16	4	18	640

*Signifies that the lands are located within the exterior boundaries of a national forest.

SAN BERNARDINO COUNTY—Continued.

	Sec.	T. N.	R. E.	S.B.M. Acres
	36	4	18	640
	36	4	22	640
	16	4	23	640
E½	16	4	24	320
	36	4	24	640
S½, SE¼ of NE¼, Lots 2, 3, 4	16	4	25	470.88
S½	36	4	25	320
	16	5	2	640
N½ and SE¼	16	5	3	480
	16	5	4	650.76
	36	5	4	640
	16	5	5	640
	36	5	5	637.36
	16	5	6	640
	36	5	6	640
	16	5	7	640
	36	5	7	638.08
	16	5	8	640
	36	5	8	640
	16	5	9	640
	36	5	9	640
	16	5	10	640
	36	5	10	640
	16	5	11	647.40
	36	5	11	640
	16	5	12	640
NE¼	36	5	13	160
	16	5	15	640
	36	5	15	640
SW¼ and S½ of NW¼	16	5	16	240
	36	5	16	640
	16	5	17	640
	36	5	17	640
	16	5	18	640
	36	5	18	640
	16	5	19	640
	36	5	20	640
	16	5	21	640
	16	5	22	640
	16	5	23	640
	36	5	23	640
	16	5	24	640
	36	5	24	640
	16	6	1	640
	36	6	1	640
	16	6	2	662.60
	36	6	2	640
	16	6	3	640
	36	6	3	640
	16	6	5	640
	36	6	5	637.20
	16	6	6	640
	36	6	6	640
	16	6	7	640
	36	6	7	640
	16	6	8	640
	36	6	8	644.56
	16	6	9	640
	36	6	9	640
	16	6	11	640
	36	6	11	640
	16	6	12	640

SAN BERNARDINO COUNTY—Continued.

	Sec.	T. N.	R. E.	S.B.M. Acres
	36	6	12	640
	16	6	13	640
	36	6	13	640
	16	6	14	640
	36	6	14	640
	36	6	15	640
	16	6	16	640
	36	6	16	640
	16	6	17	640
	36	6	17	640
	16	6	18	640
	36	6	18	640
	16	6	19	640
	36	6	19	642.36
	16	6	20	640
	36	6	20	640
	36	6	21	640
	36	6	22	640
	16	6	23	640
	36	6	23	640
	16	6	24	640
W½	16	7	1	320
	36	7	1	640
S½	36	7	2	320
	16	7	3	640
	36	7	3	640
	16	7	4	640
	36	7	4	654.64
	16	7	5	640
	36	7	5	571.26
E½ and SW¼	16	7	6	480
	36	7	6	640
	16	7	7	640
	36	7	7	640
	36	7	8	640
W½, W½ of NE¼, N½ of SE¼	36	7	9	480
	16	7	10	640
	36	7	10	640
	16	7	11	640
	36	7	11	637.72
	16	7	12	640
	36	7	12	640
	16	7	13	640
	36	7	13	640
	16	7	14	640
	36	7	14	640
	16	7	15	665.92
NW¼ of SE¼	16	7	16	40
	36	7	16	640
	16	7	17	640
	36	7	17	640
	16	7	18	640
	36	7	18	640
	16	7	19	640
	36	7	19	640
	16	7	20	640
	36	7	20	640
	16	7	21	640
	36	7	21	640
	16	7	22	640
	36	7	22	632.80

SAN BERNARDINO COUNTY—Continued.

	Sec.	T. N.	R. E.	S.B.M. Acres
	16	7	23	640
	36	7	23	640
N½ of NW¼ and SW¼	16	7	24	240
	16	8	1	643.64
	16	8	2	640
	36	8	2	640
	16	8	3	640
	36	8	3	640
SE¼ of NW¼, S½ of NE¼ and SW¼	36	8	5	280
	16	8	7	640
	16	8	8	640
	36	8	8	640
	16	8	9	640
	36	8	9	640
	16	8	10	640
	36	8	10	640
	16	8	11	640
	36	8	11	640
	16	8	12	640
	36	8	12	640
	16	8	13	640
	36	8	13	640
	16	8	14	640
	36	8	14	640
	16	8	15	640
	36	8	15	639.89
	16	8	16	640
	36	8	16	640
	36	8	17	640
	16	8	18	640
	36	8	18	640
	16	8	19	640
	36	8	19	640
	16	8	20	640
	36	8	20	640
	16	8	21	640
	36	8	21	640
	16	8	22	640
	36	8	22	640
Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, SE¼ of NW¼, S½ of NE¼	36	9	4	468.17
	16	9	6	640
	36	9	6	647.24
E½	16	9	7	320
	36	9	7	640
	16	9	8	640
	36	9	8	640
	16	9	9	640
	36	9	9	640
	16	9	10	640
	36	9	10	640
	16	9	11	640
	36	9	11	640
	36	9	12	647.51
W½	16	9	13	320
	36	9	13	638.27
	16	9	14	640
	36	9	14	640
	16	9	15	640
	36	9	15	640
	36	9	16	640
	16	9	17	640
	16	9	18	640

SAN BERNARDINO COUNTY—Continued.

	Sec.	T. N.	R. E.	S.B.M. Acres
	36	9	18	640
	16	9	19	640
	36	9	19	640
	16	9	20	640
	36	9	20	640
	16	9	21	640
	36	9	21	640
Lots 2, 3, 4, 6, 8	16	10	1	82.58
	36	10	4	640
	16	10	5	640
	36	10	5	647.54
	16	10	6	640
	36	10	6	640
NE¼	16	10	7	160
	36	10	7	638.14
	16	10	8	640
	36	10	8	640
	16	10	9	640
	36	10	9	640
	16	10	10	640
	36	10	10	640
	16	10	11	640
	36	10	11	640
	16	10	12	640
	36	10	12	640
	36	10	14	639.51
	16	10	15	640
	36	10	15	640
	16	10	16	640
	36	10	16	640
	16	10	17	640
	36	10	17	640
	16	10	18	640
	16	10	19	640
	36	10	19	640
	16	10	20	640
	36	10	20	640
N½ and E½ of SE¼	16	10	21	400
N½ and SE¼	36	10	21	480
	16	10	22	640
S½ of SW¼	16	11	1	80
	36	11	1	640
	16	11	2	640
SE¼ and N½ of SW¼	16	11	4	240
	36	11	5	640
	16	11	6	640
SW¼	36	11	8	160
N½ and SE¼	36	11	10	480
	16	11	11	640
N½ and N½ of SW¼	36	11	11	400
	16	11	12	640
	36	11	12	640
	16	11	13	640
NE¼ and N½ of NW¼ of Tract 39	(16)	11	15	240
Tract 44	(36)	11	15	640
NE¼ of NW¼	28	11	15	40
	16	11	16	640
	36	11	16	640
Tract 38 (SE¼ of NE¼)	2	11	17	40
SW¼	16	11	17	160
	16	11	18	640
	16	11	19	640

SAN BERNARDINO COUNTY—Continued.

	Sec.	T. N.	R. E.	S.B.M. Acres
	36	11	19	640
	16	11	20	640
	36	11	20	640
	16	12	1	640
	36	12	1	640
	36	12	2	640
	16	12	3	640
	36	12	3	640
	36	12	4	640
	16	12	5	640
	36	12	5	640
	16	12	6	640
	36	12	6	640
	16	12	7	640
SW¼	36	12	7	160
	16	12	9	640
SW¼	36	12	9	160
	16	12	10	640
	16	12	11	640
	36	12	11	640
	16	12	12	640
	36	12	12	640
	16	12	14	640
E½	36	12	17	320
	36	12	18	640
	16	12	19	640
	36	12	19	640
	36	13	2	640
	16	13	3	640
	16	13	4	640
	36	13	4	640
	16	13	5	640
	36	13	5	640
SW¼	16	13	6	160
SW¼	36	13	6	160
	36	13	8	640
	16	13	9	640
	36	13	9	640
	16	13	10	640
	16	13	11	640
	36	13	11	640
	16	13	12	640
N½, SE¼, W½ of SW¼	36	13	12	560
	16	13	13	640
SW¼	36	13	14	160
NW¼ of SE¼	31	13	16	40
S½	16	13	17	320
	16	14	1	640
	36	14	1	640
	16	14	2	640
S½	36	14	2	320
	16	14	3	640
SW¼	36	14	3	160
NW¼	16	14	4	160
	16	14	5	640
	36	14	5	640
	16	14	6	640
	36	14	6	640
	16	14	7	640
	36	14	9	640
	16	14	10	640
	36	14	10	640

SAN BERNARDINO COUNTY—Continued.

	Sec.	T. N.	R. E.	S.B.M. Acres
	16	14	11	640
	36	14	11	640
	16	14	12	640
	36	14	12	640
	16	14	16	633.75
NE¼ of NE¼	27	14	16	40
	16	15	1	640
	36	15	1	640
	16	15	2	640
	36	15	3	640
	16	15	4	640
	36	15	4	640
	16	15	5	640
	36	15	5	640
	16	15	6	640
	36	15	6	640
	16	15	7	640
E½	16	15	9	320
	36	15	9	640
	16	15	10	640
	36	15	10	640
	16	15	11	640
	36	15	11	640
	16	15	13	640
	36	15	13	640
E½	16	16	1	320
	36	16	1	640
	16	16	2	640
	36	16	2	640
S½	36	16	3	320
NW¼	16	16	4	160
N½	36	16	4	320
NE¼ and SW¼	16	16	5	320
	36	16	5	640
W½ and SE¼	16	16	6	480
	36	16	11	640
NE¼ of NE¼, S½ of NE¼, SE¼, S½ of SW¼	16	16	12	360
	36	16	12	640
NW¼	16	16	13	160
	16	16	14	640
E½, E½ of SW¼, NW¼	36	16	14	560
S½	36	17	1	320
N½	16	17	2	320
	16	17	3	640
	16	17	9	640
W½ and SE¼	36	17	9	480
W½	16	17	10	320
	36	17	11	640
	16	17	14	640
	36	17	14	640
	36	18	2	640
	16	18	4	640
NE¼	16	18	5	160
	16	18	6	640
	16	18	7	640
	16	18	9	640
W½	36	18	9	320
	16	18	10	640
E½	16	18	11	320
	36	18	11	640
W½	16	18	12	320

SAN BERNARDINO COUNTY—Continued.

	Sec.	T. N.	R. E.	S.B.M. Acres
SW¼	36	18	12	160
	16	18	13	640
W½ and SE¼	36	18	13	480
NE¼	16	19	1	160
NW¼	36	19	1	160
	36	19	2	640
	16	19	3	640
	16	19	4	640
	36	19	4	640
	16	19	5	640
	36	19	6	640
S½ of NW¼, NE¼ of NE¼	36	19	7	120
SE¼	36	19	8	160
E½ and SW¼	36	19	12	480
Lot 1	16	19	13	1.11
W½	36	20	4	320
	36	20	7	640
Lot 1	36	20	12	2.20

	Sec.	T. N.	R. W.	S.B.M. Acres
	36	4	2	658.81
	16	5	2	626.84
	36	5	2	621.52
W½ of NW¼, W½ of SW¼, E½ of NE¼, SE¼, Lots 1, 2, 3, 4	16	6	1	554.08
	16	6	2	667.31
	36	6	2	670.39
	36	6	3	647.03
	36	7	1	618.52
	36	7	2	640
NW¼ and Lots 1, 2, 3, 4, 5, 6, 7, 8	36	7	3	496.90
E½	16	8	1	320
	36	8	1	640
	36	8	3	640
	36	12	1	698.78
	36	12	2	648.77
N½, N½ of SW¼, N½ of SE¼, Lots 1, 2	36	12	3	564.21

	Sec.	T. S.	R. E.	S.B.M. Acres
	16	1	5	640
	36	1	5	640
	16	1	6	640
	36	1	6	640
	16	1	7	640
SW¼	36	1	7	160
W½	36	1	8	320
SW¼	16	1	14	160
	36	1	14	640
	16	1	15	640
NE¼	36	1	15	160
	16	1	16	640
N½	16	1	19	320
NW¼	16	1	22	160

	Sec.	T. S.	R. E.	M.D.M. Acres
	36	25	42	640
	16	25	44	640

SAN BERNARDINO COUNTY—Continued.

	Sec.	T. S.	R. E.	M.D.M. Acres
NW¼ and N½ of NE¼	16	26	41	240
NW¼ and W½ of SW¼	36	26	42	240
	16	26	43	640
	36	26	43	640
	16	26	44	640
W½ and Lots 1, 2, 3, 4	16	26	47	375.40
W½ and Lots 1, 2, 3, 4	16	27	47	375.80
SW¼	16	28	42	160
	36	28	42	640
W½ and Lots 1, 2, 3, 4	16	28	47	376.48
NW¼, NE¼ of SE¼, Lots 2, 3, 4, 5, 6	36	29	41	337.50
	16	29	43	640
	36	29	43	640
	16	29	44	640
	16	29	45	640
	36	29	45	640
	16	30	41	640
	36	30	42	640
	36	30	43	640
	16	30	45	640
W½, SE¼ and S½ of NE¼	16	31	42	560
	36	31	42	640
	16	31	44	640
	36	31	44	640
	16	31	45	640
	36	31	45	640
	36	32	44	640
	16	32	45	640
	36	32	45	658.88
	16	32	47	640
Total				302,088.91

SAN DIEGO COUNTY.

	Sec.	T. S.	R. E.	S.B.M. Acres
W½ and NE¼	36	9	7	480
NE¼ and N½ of NW¼	16	10	5	240
NW¼ of SW¼	36	10	5	40
W½, NE¼, N½ of SE¼, SW¼ of SE¼	16	11	5	600
	36	11	5	640
E½ of SW¼, SE¼ of NW¼	16	12	2	120
NE¼ of NE¼	16	12	4	40
W½, W½ of SE¼, SE¼ of SE¼, W½ of NE¼, SE¼ of NE¼	16	12	5	560
N½ and NE¼ of SE¼	36	12	5	360
	16	13	5	640
N½ and SE¼	36	13	5	480
N½, SE¼, E½ of SW¼, NW¼ of SW¼	36	14	1	600
W½ and W½ of NE¼	16	14	5	400
E½, SW¼, S½ of NW¼, NE¼ of NW¼	36	14	5	600
	36	14	6	640
N½	16	15	2	280
*W½ of SW¼, SE¼ of SW¼, SE¼ of SE¼	36	15	2	160
	16	15	6	640
	36	15	6	640
W½, NE¼, N½ of SE¼	16	15	7	560
	36	15	8	640
N½ of SW¼	36	16	1	80

*Signifies that the lands are located within the exterior boundaries of a national forest.

SAN DIEGO COUNTY—Continued.

	Sec.	T. S.	R. E.	S.B.M. Acres
*NE¼ of NW¼, N½ of NE¼	36	16	4	120
	*16	16	5	640
	16	16	6	640
SW¼	36	16	7	160
*W½ and W½ of E½	16	17	3	480
*W½ of SW¼, E½ of SE¼	16	17	4	160
W½, SE¼, S½ of NE¼ of Tract 52	(36)	17	6	561.98
	36	17	7	640
N½ and SW¼	16	17	8	480
SW¼, SE¼ of NE¼, SW¼ of SE¼, E½ of SE¼	16	18	1	320
N½ and Lots 1, 2, 3, 4	36	18	1	364.20
N½ and SW¼ of Tract 50	(16)	18	6	480

	Sec.	T. S.	R. W.	S.B.M. Acres
	36	8	4	640
NW¼ of NE¼, S½ of NE¼	16	14	1	120
W½ of NE¼, SE¼ of NE¼, NE¼ of NW¼	36	14	1	160
Total				15,406.18

SAN FRANCISCO COUNTY.

No vacant lands.

SAN JOAQUIN COUNTY.

No vacant lands.

SAN LUIS OBISPO COUNTY.

	Sec.	T. S.	R. E.	M.D.M. Acres
N½ of NW¼ and SW¼ of NW¼	16	25	8	120
SE¼	36	25	8	160
W½ and SE¼	36	28	14	480
*Lot 6	36	30	14	35.86
*N½ of SE¼	36	30	16	80
*S½ of NE¼	16	31	16	80
*SW¼ of SW¼, NE¼ of SW¼ and W½ of SE¼	36	31	16	160
*Lots 8 and 9	36	32	16	31.48
*SW¼ of NW¼	16	32	18	40

	Sec.	T. N.	R. W.	S.B.M. Acres
N½ of NW¼, SW¼ of NW¼ and S½	16	11	27	440
Total				1,627.34

SAN MATEO COUNTY.

No vacant lands.

SANTA BARBARA COUNTY.

	Sec.	T. N.	R. W.	S.B.M. Acres
*NE¼ of NW¼	36	6	25	40
*SE¼ of NW¼	16	7	27	40
SE¼ of SW¼ and SE¼	16	9	26	200
*Lot 16	36	12	31	39.08
Total				319.08

*Signifies that the lands are located within the exterior boundaries of a national forest.

SANTA CLARA COUNTY.

	Sec.	T. S.	R. E.	M.D.M. Acres
	36	5	4	647.32
Lot 1	36	6	2	1.89
NE¼ of SW¼, S½ of SW¼, N½ of SE¼	36	7	4	200
S½ of N½ and S½	16	7	5	480
N½ of SW¼, SE¼ of SW¼	16	8	5	120
SW¼ of NE¼	6	9	5	40
Lots 1, 7, 11, 15	20	9	5	152.64
Lot 5	36	10	5	15.32

	Sec.	T. S.	R. W.	M.D.M. Acres
Lots 11, 12, 13, 14	36	8	1	137.52
Total				1,794.69

SANTA CRUZ COUNTY.

No vacant lands.

SHASTA COUNTY.

	Sec.	T. N.	R. W.	M.D.M. Acres
*SW¼ of NW¼, E½ of NW¼, SE¼ of SE¼	36	29	10	160
	16	30	8	640
	16	30	9	640
NW¼ of NW¼, E½ of NW¼, NE¼	16	32	6	280
N½ of NW¼, SW¼ of NW¼, W½ of SW¼, SE¼ of SW¼, S½ of SE¼	36	32	6	320
W½, NE¼, NW¼ of SE¼	16	33	6	520
E½ of NW¼, E½ of SW¼, SE¼	36	33	7	320
SE¼ of SW¼, SW¼ of SE¼	36	33	8	80
*SW¼ of NW¼, NW¼ of SW¼	16	34	2	80
S½	16	34	4	320
W½ of SW¼, SE¼ of SW¼	36	34	4	120
W½, W½ of SE¼, SE¼ of SE¼	16	35	1	440
*NW¼	36	35	2	160
*N½, NE¼ of SE¼, S½ of SE¼	36	35	3	440
	16	35	4	640
W½	36	35	4	320
	16	35	5	640
*W½, W½ of NE¼, SE¼ of NE¼, SE¼	16	35	6	600
	36	35	7	640
NE¼ and N½ of SE¼	16	36	4	240
	36	36	4	640
NW¼ and N½ of NE¼	16	36	5	240
	36	36	5	640
*SE¼ of SW¼, SW¼ of SE¼	16	37	3	80
NW¼	32	37	3	160
*SE¼ of SW¼, SW¼ of SE¼	36	37	3	80
S½ of SE¼	36	37	5	80
*N½	16	38	1	320
*E½ of NE¼	36	38	2	80
*W½ of SE¼	36	38	3	80
*N½ of SW¼	36	39	5	80

	Sec.	T. N.	R. E.	M.D.M. Acres
NW¼, N½ of NE¼, S½	16	35	5	560
	36	36	4	640
	16	36	5	640

*Signifies that the lands are located within the exterior boundaries of a national forest.

SHASTA COUNTY—Continued.

	Sec.	T. N.	R. E.	M.D.M. Acres
SW¼ of SW¼, E½ of W½, E½	36	36	5	520
SE¼ of SW¼, SW¼ of SE¼	16	37	3	80
W½	16	38	4	320
*SW¼	36	39	5	160
Total				13,000

SIERRA COUNTY.

	Sec.	T. N.	R. E.	M.D.M. Acres
*NE¼	36	19	9	160
*N½ of SE¼	36	19	13	80
*S½ of NW¼	16	19	15	80
W½, W½ of E½	16	20	17	480
*SW¼ of NW¼	16	21	13	40
*SW¼	36	21	16	160
	16	21	17	640
*SW¼ of NE¼	16	22	10	40
Total				1,680

SISKIYOU COUNTY.

	Sec.	T. N.	R. W.	M.D.M. Acres
*NE¼ of SE¼	16	37	10	40
*SE¼ of NE¼	16	37	11	40
*SE¼ of NE¼, E½ of SE¼, SW¼ of SE¼	16	38	10	160
*NW¼ of NE¼ and S½ of SE¼	16	38	11	120
*NW¼	36	38	11	160
*S½ of SW¼	36	39	6	80
*SE¼ of SW¼ and SW¼ of SE¼	36	39	9	80
*S½ of NW¼	16	39	10	80
*W½ of SW¼	36	39	10	80
*S½ of SE¼	16	39	11	80
*NW¼ and SW¼ of NE¼	36	39	11	200
*W½ of NE¼	16	39	12	80
*W½ of E½ and SE¼ of SW¼	16	40	7	200
*S½ of SE¼	36	40	8	80
*W½ of W½ and E½	16	40	9	480
*N½ of SW¼	36	40	9	80
*NE¼ of SE¼	16	40	10	40
*SW¼ of NW¼, SE¼ of SE¼	36	40	10	80
*S½	36	40	11	320
*N½ of NW¼, SE¼ of NW¼, SE¼ of NE¼, SW¼	36	41	3	320
SE¼ of SE¼	34	41	4	40
*S½	16	41	6	320
NW¼, W½ of NE¼, NE¼ of NE¼, NW¼ of SW¼	16	41	7	320
*N½	36	41	7	320
SW¼ of SW¼, SE¼ of NE¼, E½ of SE¼	36	41	8	160
*W½ of NW¼, NE¼ of NW¼, W½ of SW¼, NE¼ of SW¼	16	41	10	240
S½ of NW¼ and SW¼	36	41	10	240
*E½ of NW¼, N½ of SW¼, SW¼ of SE¼	16	41	12	200
*S½ of SE¼	36	41	12	80
	36	42	1	640
*E½ of NW¼, SW¼, NE¼ of SE¼	16	42	3	280
*NE¼ of NW¼, NW¼ of NE¼	36	42	3	80
*SW¼ and S½ of NW¼	16	42	7	240
	36	42	8	640
*NW¼ of NW¼	36	42	10	40

*Signifies that the lands are located within the exterior boundaries of a national forest.

SISKIYOU COUNTY—Continued.

	Sec.	T. N.	R. W.	M.D.M. Acres
*NW¼ of NE¼, SE¼ of NE¼, NE¼ of SE¼	36	42	11	120
SE¼ of NW¼, S½ of SW¼, W½ of E½, NE¼ of SE¼, SE¼ of NE¼	16	43	1	360
*W½ of W½	36	43	1	160
S½ of NW¼, N½ of SW¼, NW¼ of SE¼	16	43	7	200
N½ of NW¼	36	43	7	80
N½ of N½	16	44	1	160
SW¼ of NE¼, NW¼ of SE¼	16	44	4	80
	36	44	4	640
W½ of NW¼, SE¼ of NE¼, NE¼ of SE¼	16	44	7	160
NW¼ of NE¼, N½ of SW¼	36	44	7	120
*S½	16	44	11	320
*N½ of NE¼, W½ of SE¼	36	44	12	160
S½ and SW¼ of NW¼	36	45	1	360
NW¼, W½ of NE¼, N½ of SW¼, NW¼ of SE¼	16	45	3	360
	16	45	7	625.84
*W½ of NW¼ and SW¼	16	45	8	240
*NW¼ of NE¼, NE¼ of SW¼, N½ of SE¼, SE¼ of SE¼	36	45	9	200
*E½ of SW¼	16	45	11	80
*W½ of SE¼	16	45	12	80
*E½ of NW¼	36	45	12	80
*N½ of NE¼	16	46	3	80
NW¼	36	46	4	160
SE¼ of NE¼	36	46	7	40
*W½ and W½ of NE¼	16	46	9	400
*E½, E½ of W½, NW¼ of NW¼, SW¼ of SW¼	36	46	9	560
*E½ of SE¼, NW¼ of NW¼, E½ of NW¼	36	46	12	200
*S½ and S½ of NW¼	36	47	7	400
*W½ of NW¼, W½ of NE¼, SE¼, N½ of SW¼, SE¼ of SW¼	36	47	8	440
*E½	36	48	9	320
*SE¼ and E½ of SW¼	36	48	10	240
*SE¼ and E½ of SW¼	36	48	11	240
*SE¼	36	48	12	160

	Sec.	T. N.	R. E.	M.D.M. Acres
	16	41	1	640
N½ of NW¼, SW¼, NW¼ of SE¼	36	41	1	280
	16	42	1	640
*SW¼ of NE¼	16	42	2	40
*Lot 1	36	42	4	40.56
	*36	45	1	640
	*16	45	3	640
	*36	45	3	640
Lots 1, 2, 3, 4, 5, E½ of SE¼	16	46	4	259.36
W½ and W½ of SE¼	36	47	1	400
E½ and S½ of SW¼	16	47	3	400
Lots 2 and 3	16	48	1	58.78
Lot 1	16	48	3	0.82
Lot 2	36	48	3	2.32

	Sec.	T. N.	R. E.	H.M. Acres
*Lots 1, 2, 4, 5 and 8	16	9	8	187.60
*SW¼ of SW¼, Lot 1	16	10	8	73.63
*W½ of SE¼, NE¼ of SE¼, SE¼ of NE¼	16	13	5	160
*SW¼ of SE¼, NE¼ of SW¼, SE¼ of NW¼, W½ of NW¼, NW¼ of NE¼	36	13	5	240

*Signifies that the lands are located within the exterior boundaries of a national forest.

SISKIYOU COUNTY—Continued.

	Sec.	T. N.	R. E.	H.M. Acres
*W½ of SW¼	16	13	6	80
*E½ of SE¼	16	13	8	80
*SW¼	36	14	4	160
*NE¼ of NE¼	16	14	5	40
*SW¼ of NW¼	36	14	5	40
*SE¼	16	14	7	160
*SE¼ of NE¼, NE¼ of SE¼	36	14	7	80
*N½ of NW¼	16	15	5	80
*W½ of NW¼, NE¼ of NW¼, W½ of NE¼, SE¼ of NE¼	16	15	7	240
*E½ and NW¼	36	15	7	480
*SW¼ of NW¼, N½ of SE¼, SE¼ of SE¼	16	16	5	160
*S½ of NE¼	16	16	8	80
*SW¼ of SW¼, SE¼ of SE¼	36	17	6	80
*W½ of NW¼	16	17	7	80
*SE¼ and NW¼ of SW¼	36	17	7	200
*NW¼ of SW¼, SE¼ of NW¼	16	18	7	80
*E½, E½ of SW¼, NW¼ of SW¼, E½ of NW¼, SW¼ of NW¼, Lot 1	36	19	7	599.92
Total				22,528.83

SOLANO COUNTY.

	Sec.	T. N.	R. W.	M.D.M. Acres
Lot 3	36	3	3	3.96
NE¼ of SE¼	9	6	2	40
S½ of NW¼, SW¼ of NE¼	15	6	2	120
NW¼ of NW¼, W½ of SW¼	16	7	2	120
Total				283.96

SONOMA COUNTY.

	Sec.	T. N.	R. W.	M.D.M. Acres
W½ of SW¼, SE¼ of SW¼	16	11	8	120
SE¼	36	12	9	480
Total				600

STANISLAUS COUNTY.

	Sec.	T. S.	R. E.	M.D.M. Acres
NW¼, N½ of SW¼, Lots 1 and 2	36	4	5	321.12
NW¼, N½ of SW¼, SE¼ of SW¼	16	6	5	280
N½, N½ of S½, SE¼ of SE¼	36	7	5	520
N½ and SE¼	16	8	5	480
Total				1,601.12

SUTTER COUNTY.

No vacant lands.

TEHAMA COUNTY.

	Sec.	T. N.	R. W.	M.D.M. Acres
*NW¼ and N½ of NE¼	16	23	8	240
*W½ of NW¼	36	23	9	80

*Signifies that the lands are located within the exterior boundaries of a national forest.

TEHAMA COUNTY—Continued.

	Sec.	T. N.	R. W.	M.D.M. Acres
*E½, E½ of W½, NW¼ of NW¼, SW¼ of SW¼	36	23	10	560
	16	24	7	640
*W½	36	24	10	320
	16	25	7	640
W½ of NE¼, E½ of NW¼, SW¼	36	25	7	320
Lots 2 and 3	6	25	8	18.67
Lot 2	31	25	8	34.64
	*16	25	9	640
W½	36	26	7	320
W½	16	26	8	320
	16	27	8	640
	36	27	8	640
	36	28	9	640
NW¼ of NW¼	24	29	1	40
E½ and SW¼	36	29	1	480
	36	29	9	640

	Sec.	T. N.	R. E.	M.D.M. Acres
	16	24	2	640
*SE¼ of NW¼	16	26	2	40
*E¼ of NW¼	36	28	1	80
	16	28	3	640
*SE¼ of NW¼	36	30	4	40
Total				8,653.31

TRINITY COUNTY.

	Sec.	T. N.	R. W.	M.D.M. Acres
*SW¼ of SE¼	16	26	10	40
*S½ of NE¼, NE¼ of SE¼, NW¼ of SW¼	16	27	12	160
*W½, NW¼ of NE¼, W½ of SE¼, SE¼ of SE¼	36	27	12	480
*SW¼ of SE¼	36	30	12	40
*W½ of SW¼	36	31	10	80
*SW¼ of NW¼	36	31	12	40
	16	32	9	640
E½	36	32	9	320
NE¼ of NW¼	36	32	10	40
E½ of NE¼ and SE¼	36	32	12	240
N½ of N½	36	33	9	160
Lot 7	16	33	10	36.61
*SW¼ of SW¼	16	34	8	40
*Lots 1, 2, 6, 7, NW¼, N½ of SW¼, W½ of NE¼	36	34	8	502.32
*S½ of SW¼	16	34	9	80
E½ of W½	36	34	9	160
E½ of E½, W½ of W½, NW¼ of NE¼, NE¼ of NW¼	36	34	10	400
S½ of NE¼, NW¼ of NE¼	16	34	11	120
NE¼ and E½ of NW¼	36	34	11	240
*E½	16	34	12	320
*S½ of NE¼, E½ of NW¼, SW¼ of NW¼	36	34	12	200
*E½ of NE¼	16	35	7	80
*W½ of SW¼, SE¼ of NW¼	16	35	12	120
*SE¼ of NE¼, NE¼ of SE¼	36	36	7	80
*NW¼ of NE¼, NE¼ of NW¼	16	36	9	80
*SE¼ of SW¼	36	36	10	40
*N½ of NE¼, SW¼, SW¼ of NW¼	16	36	11	280
*SE¼ of NE¼	36	36	11	40
*SW¼	16	37	6	160

*Signifies that the lands are located within the exterior boundaries of a national forest.

TRINITY COUNTY—Continued.

Sec.	T. N.	R. W.	M.D.M. Acres
*Lot 11	37	7	39.28
*NE¼ of NE¼	37	7	40
*SW¼, N½ of SE¼, E½ of NE¼	37	8	320
*E½ of E½ and SW¼ of SE¼	37	9	200
*E½ of SE¼, SW¼ of NE¼	37	10	120
*E½ of SE¼	38	7	80
*W½ of NW¼	38	7	80
*W½ and W½ of E½	38	8	480
*W½ of SE¼, SE¼ of NE¼	38	8	120
*NE¼ and NW¼ of NW¼	39	7	200
*SW¼ of NW¼, NW¼ of SW¼	39	7	80
*S½ of NE¼, NE¼ of SE¼	39	8	120

Sec.	T. N.	R. E.	H.M. Acres
NE¼ of SE¼	1	6	40
*NE¼	1	6	160
*W½ of NE¼	2	6	80
*W½ and Lot 1	2	8	358.20
*S½ of S½, NW¼ of SW¼, NE¼ of SE¼	3	7	240
*S½	3	7	320
*NE¼, N½ of SE¼, SW¼ of SE¼	4	6	280
*E½ of E½	4	7	160
*SW¼, S½ of SE¼, N½ of NW¼	5	7	320
*NE¼	5	7	160
*S½ of SW¼	6	8	80
*S½, NW¼, SW¼ of NE¼, E½ of NE¼	7	7	600
*S½ of SW¼, NE¼ of SW¼	7	8	120

Sec.	T. S.	R. E.	H.M. Acres
*36	1	6	640
*Lots 11, 12, 13, 14	2	6	89.39
*E½ of E½, W½ of NE¼, NW¼ of SE¼	2	7	280
*S½, W½ of NW¼, SE¼ of NE¼	2	7	440
*SW¼ of NE¼	3	7	40
*16	3	8	577.24
NW¼ and E½ of NE¼	4	7	240
*36	4	7	640
Total			12,963.04

TULARE COUNTY.

Sec.	T. S.	R. E.	M.D.M. Acres
*SW¼ of NE¼, NE¼ of NE¼	14	32	80
S½ of S½	15	27	160
SW¼ and SW¼ of SE¼	15	27	200
E½	15	28	320
NE¼ of SE¼	16	28	40
*SW¼ of NW¼	17	29	40
E½	19	29	320
*SW¼ of NW¼	22	33	40
Total			1,200

*Signifies that the lands are located within the exterior boundaries of a national forest.

TUOLUMNE COUNTY.

	Sec.	T. N.	R. E.	M.D.M. Acres
*SE¼ of NE¼	36	1	18	40
Lot 4	1	2	15	41.40
W½ of SE¼	3	2	16	80
*S½ of N½ and N½ of S½	36	2	17	320
Lots 1, 2, 5, 6, SW¼ of NE¼, W½ of NW¼, NW¼ of SE¼, N½ of SW¼	35	3	14	346.87
Total				828.27

VENTURA COUNTY.

	Sec.	T. N.	R. W.	S.B.M. Acres
SW¼ of NE¼	36	4	19	40
*Lots 9, 10, 11	16	4	20	118.14
Total				158.14

YOLO COUNTY.

	Sec.	T. N.	R. W.	M.D.M. Acres
NE¼ of SW¼, NW¼ of SE¼	2	12	4	80
NE¼ of SW¼, SW¼ of SW¼	3	12	4	80
Lot 1, SE¼ of NW¼	6	12	4	82.82
NE¼, E½ of NW¼, N½ of SW¼, N½ of SE¼, SE¼ of SE¼	36	12	4	440
Total				682.82

YUBA COUNTY.

	Sec.	T. N.	R. E.	M.D.M. Acres
*N½ of NW¼	36	20	8	80

Total acreage of vacant school lands on September 29, 1924, 790,179.01 acres.

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BIENNIAL REPORT

OF THE

STATE TREASURER

STATE OF CALIFORNIA

FOR THE SEVENTY-FOURTH AND SEVENTY-FIFTH
FISCAL YEARS, JULY 1, 1922, TO JUNE 30, 1924

CHARLES G. JOHNSON
State Treasurer

CALIFORNIA STATE PRINTING OFFICE
FRANK J. SMITH, Superintendent
SACRAMENTO, 1924

34864

Chas. G. Johnson

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STATE TREASURERS OF THE STATE OF CALIFORNIA.

Charles G. Johnson	January	8, 1923,	to		
Friend W. Richardson	January	4, 1915,	to	January	8, 1923
E. D. Roberts	February	20, 1911,	to	January	4, 1915
W. R. Williams	January	7, 1907,	to	February	20, 1911
Truman Reeves	January	2, 1899,	to	January	7, 1907
W. S. Green	April	21, 1898,	to	January	2, 1899
Levi Rackliffe	January	7, 1895,	to	April	21, 1898
J. R. McDonald	January	5, 1891,	to	January	7, 1895
Adam Herold	January	3, 1887,	to	January	3, 1891
D. J. Oullahan	December	24, 1884,	to	January	3, 1887
Wm. A. January	January	1, 1883,	to	December	24, 1884
John Weil	January	5, 1880,	to	January	1, 1883
Jose G. Estudillo	December	4, 1875,	to	January	5, 1880
Ferdinand Baehr	December	2, 1871,	to	December	4, 1875
A. F. Coronel	December	7, 1867,	to	December	2, 1871
Romualdo Pacheco	October	10, 1863,	to	December	7, 1867
R. R. Ashley	January	6, 1862,	to	October	10, 1863
Thomas Findley	January	4, 1858,	to	January	6, 1862
James L. English	February	13, 1857,	to	January	4, 1858
Henry Bates	January	7, 1856,	to	February	13, 1857
S. A. McMeans	January	2, 1854,	to	January	7, 1856
Richard Roman	December	22, 1849,	to	January	2, 1854

STATE TREASURER'S OFFICE.

CHARLES G. JOHNSON,
State Treasurer.

John H. McGehee,
Chief Deputy.

W. B. Shearer,
Cashier.

Edward M. Lynch,
Bond Department.

F. G. Griebnow, Jr.,
Accounting Department.

Paul Brown,
Watchman.

W. A. McElvaine,
Depository Department.

Ethel Secor,
Secretary-Stenographer.

Conrad Luppen,
Watchman.

E. Williams,
Watchman.

M. F. Rowland,
Watchman.

C. S. Jackson,
Porter.

BIENNIAL REPORT OF THE STATE TREASURER.

Seventy-Fourth and Seventy-Fifth Fiscal Years, July 1, 1922, to June 30, 1924.

SACRAMENTO, CALIFORNIA,
September 15, 1924.

HON. FRIEND W. RICHARDSON,
Governor of California.

DEAR SIR: I have the honor to submit herewith a report reflecting the actual balance in the treasury to the credit of the state, with a summary of the receipts and payments by warrants drawn on the treasury during the two preceding fiscal years. This report contains in every detail the business transacted by this office during the seventy-fourth (74th) and seventy-fifth (75th) fiscal years, beginning July 1, 1922, and ending June 30, 1924.

The magnitude of business transacted by this office during the period above indicated is supported by the total receipts of $186,612,976.56 for the biennial period, divided as follows:

For the seventy-fourth fiscal year	$81,393,047 97
For the seventy-fifth fiscal year	105,219,928 59
Total	$186,612,976 56

The disbursements for the biennial period totaling $188,825,139.24, divided as shown hereunder:

For the seventy-fourth fiscal year	$88,708,391 29
For the seventy-fifth fiscal year	100,116,747 95
Total	$188,825,139 24

The above indicated figures reflect gross receipts and payments and include bond sales.

The colossal figures above shown evidence the volume of business transacted by this office, which has been performed by the same number of employees as were in office during the sixty-sixth and sixty-seventh fiscal years, when the receipts were $67,732,218.32 and payments $71,970,222.61, or 150 per cent increase over that period.

The summaries annexed to this report reflect in a comprehensive manner the complete operations of this office during the period beginning July 1, 1922, to June 30, 1924.

DEPOSITS IN BANKS.

The original act authorizing the deposit of state moneys in banks of this state was approved by the Governor on February 28, 1907. This act continued in its original form until April 12, 1923, with one exception, by a vote of the people, irrigation district bonds were made acceptable as security for state funds.

Senate Bill No. 105, approved by the Governor April 12, 1923, repealed all acts in conflict therewith. Under this act, two separate methods of depositing state moneys, known as inactive and active deposits, became applicable.

The inactive deposits must be secured by certain defined bonds, namely, United States bonds or notes, state, county, municipal, school and irrigation district; the active deposits to use the same class of securities, or approved surety bonds.

This change has proven to be beneficial to the state in a twofold way. The active funds, which had previously been held in the vaults to meet state expenses, are now immediately, upon receipt, placed in banks on an earning capacity of two per cent on daily balances. The revenue from such source is more than double the expense of maintaining this office. It also practically absolves the state from loss by burglary, etc., as there is but a nominal amount kept in the vaults.

The inactive deposits made with banks are of a permanent nature, although subject to call at any time. They are not disturbed to any great degree under normal circumstances. The rate of interest on this class of deposit runs from 3¾ per cent to 4 per cent.

On page 33 of this report, you will find a statement of the revenues derived from deposits listed as per months, for the biennium ending June 30, 1924.

During the 1922 legislature, I appeared before the Senate Finance Committee and made the statement that the revenue from deposits for the biennium would amount to $1,500,000. I am pleased to report that the increase has been even greater. The excess amount collected over my estimate was $159,476.99. This information was given the committee in view of the fact that the budget commission had only allowed $900,000 for the biennium. Interest earned for the month of May, 1924, reached approximately $95,000. This amount represents an increase of more than $25,000 over the same month in 1922.

State money is deposited in a larger number of banks than at any previous time, the distribution of which has a tendency to stimulate production and industry, and at the same time more logically distribute the funds over the entire state.

IRRIGATION DISTRICT BONDS AS SECURITY.

The present dry year has revealed to the most pessimistic that the pioneers of this class of securities looked far into the future in taking into consideration the issuance of these bonds, the revenue from the sale of which goes toward the financing of construction, for the impounding and conserving of the mountain waters, for domestic and irrigation purposes. Lands in this state, relying upon such districts for irrigation during the dry period, in nearly all cases have been supplied with sufficient water to insure good crops.

My policy in accepting these bonds as security for state deposits has been a liberal one. I have been governed by the fact that there has not been any great fluctuation in the price of these securities, and all obligations of the districts have been fully covered. Aside from that, however, is the fact that I believe these districts, honestly and intelligently formed, will be the greatest factor in the upbuilding of the state in future years.

CORPORATION FRANCHISE TAX.

This office collects corporation franchise taxes from more than twenty-five thousand corporations semiannually, which makes an immense volume of work during the months of January, February, July

and August. The amount collected during the past two years totals $65,837,485.41, and exceeds the collections of the previous biennial period by $9,412,083.19.

This tax is levied by the State Board of Equalization, under what is commonly called "Constitutional Amendment No. 1," adopted by the people in 1910. While this tax is collected and acknowledged to taxpayers by this office, the books are kept and final receipts are sent out by the State Controller.

The corporation license tax is collected by the Secretary of State and by him paid to the State Treasurer in daily settlements.

The law provides that "franchise tax" shall be paid in cash, but in order to accommodate taxpayers, certified checks and bank drafts are accepted in making settlement of franchise tax.

BONDED INDEBTEDNESS OF THE STATE OF CALIFORNIA.

Present bonded indebtedness, as disclosed under schedule herewith, amounting to $91,439,500, is an equitable amount compared to the wealth of the state. In the figures above indicated is incorporated the funded debt of 1873, amounting to $2,277,500, bearing the interest rate of 6 per cent, which bonds are held by the state for the benefit of the following funds:

School fund	$1,526,500 00
University fund	751,000 00

In connection with the above paragraph, I earnestly direct your attention to the fact that the state indebtedness is increased by the amount set forth and does not properly belong under the caption of "Indebtedness." I therefore urge you to take the necessary measures to have these bonds redeemed at an early date.

OIL TAX.

The collection of an oil protection tax is an additional duty placed upon this office by the statutes, which has increased its labor.

The collections of oil tax for the past two fiscal years amount to $404,886.94, which sum exceeds the previous biennium by $126,919.54.

GASOLINE TAX.

The gasoline tax created by act of the 1923 legislature under section 13, and known as the "motor vehicle fuel tax," amounted to $5,996,577.30 for the period February 1, 1924, to June 30, 1924.

BOND SINKING FUNDS.

There are a number of sinking funds created for the payment of interest and principal on state bonds. The creation of new funds of this character and the provisions for investments will further add to the work of this office. The sinking funds are enumerated and briefly explained as follows:

San Francisco Seawall Sinking Fund. Monthly transfers from the revenues of the San Francisco Harbor are made to provide for the payment of principal and interest on the San Francisco Seawall bonds, act 1903. The balance of this bond issue was redeemed January 2, 1924.

Second San Francisco Seawall Sinking Fund. Monthly transfers from the revenues of the San Francisco Harbor are made to provide for

the payment of interest on the San Francisco Harbor improvement bonds, act 1909.

Third San Francisco Seawall Sinking Fund. Monthly transfers from the revenues of the San Francisco Harbor are made to provide for the payment of the principal and interest on the San Francisco Harbor improvement bonds, act 1913.

India Basin Sinking Fund. Monthly transfers from the revenues of the San Francisco Harbor are made to provide for the payment of interest on the India Basin bonds.

State Highway Sinking Fund. This fund is replenished semiannually by transfers from the general fund to pay interest on the first state highway bonds.

Second State Highway Sinking Fund. This fund is replenished semiannually by transfers from the general fund to pay interest on the second highway bonds, act 1915.

Third State Highway Sinking Fund. This fund is replenished semiannually by transfers from the general fund to pay interest on the third highway bonds, constitutional amendment, 1919.

Interest and Sinking Fund of the University of California Building Bonds. This fund is replenished semiannually by transfers from the general fund to pay interest on the University of California building bonds.

UNIVERSITY OF CALIFORNIA BUILDING BONDS.

At the general election of November, 1914, a bond issue of $1,800,000 was authorized, the proceeds to be devoted to the construction of additional buildings at the state university at Berkeley. These bonds were all sold. The first forty of this issue were paid in January, 1921, and the same number will become due each year thereafter until 1965.

SAN FRANCISCO STATE BUILDING BONDS.

At the general election in November, 1914, a bond issue of $1,000,000 was authorized, the proceeds of which were to be used in the construction and equipment of a state building in San Francisco. This issue has all been sold and the first one hundred forty have matured and been paid. Twenty of these bonds mature yearly. The outstanding bonds of this issue are $840,000.

SACRAMENTO STATE BUILDING BONDS.

At the general election in November, 1914, the issuance and sale of $3,000,000 of bonds was authorized, the proceeds of which were to be used in the construction of additional capitol buildings in Sacramento. These bonds have been prepared and sold. All of these bonds are due fifty years after date, and $50,000 must be transferred each year from the general fund to the sinking fund and invested by the State Treasurer in bonds for the purpose of paying the principal.

STATE HIGHWAY BONDS.

Of the issue of $18,000,000 state highway bonds provided for by the Statutes of 1909, the first $400,000 matured July 3, 1917, and were paid. Four hundred of these bonds mature yearly until all have been wholly redeemed. Up to June 30, 1924, only $2,800,000 of these bonds had been

paid. Under the original act the interest on these bonds was paid by the counties, but in November, 1921, this financial burden was passed on to the state.

SECOND STATE HIGHWAY BONDS.

At the election of November 7, 1916, there was authorized an additional $15,000,000 state highway bonds. All of these bonds have been sold. On July 3, 1923, these bonds will begin to mature at the rate of 375 annually until all have been wholly redeemed. Under the original act the interest on these bonds was paid by the counties, but in November, 1921, this financial burden was passed on to the state.

THIRD STATE HIGHWAY BONDS.

At a special election held on July 1, 1919, there was authorized the issuance of 40,000 state highway bonds. On July 3, 1926, these bonds will begin to mature at the rate of one thousand annually until all have been redeemed. An act voted upon on November 2, 1921, places all interest charges upon the state and relieves the counties from this payment as provided in the original act: This act provided for the destruction of the remaining bonds and the engraving of new bonds at an interest rate to be determined by the State Highway Finance Board. On March 23 to 28, 1921, were canceled and destroyed 34,878 of these bonds. Up to June 30, 1924, $37,000,000 of the authorized issue were sold, and the balance of $3,000,000 were advertised for sale on June 26, 1924, but later the sale of these bonds was postponed to July 10, 1924, and said bonds were sold on this date.

SAN FRANCISCO SEAWALL BONDS, ACT 1903.

These bonds were provided for under an act approved March 30, 1903, being an issue of $2,000,000. Statutory provision was made whereby these bonds would be matured by lot, on drawing, between the first and tenth days of November, beginning in 1914. On June 30, 1923, outstanding bonds of this issue amounted to $115,000, which were redeemed January 2, 1924.

SAN FRANCISCO HARBOR IMPROVEMENT BONDS, ACT 1909.

An issue of $9,000,000 of these bonds was provided for under the Statutes of 1909. This issue has been sold and the interest is being paid out of the revenue of San Francisco Harbor.

SAN FRANCISCO HARBOR IMPROVEMENT BONDS, ACT 1913.

At the general election held in November, 1914, a bond issue of $10,000,000 was authorized for the erection of wharves, piers, seawall and other betterments of the San Francisco Harbor. Bonds to the amount of $3,000,000 had been sold up to June 30, 1924.

INDIA BASIN BONDS.

These bonds were authorized under the Statutes of 1909 for the amount of $1,000,000, to provide a fund for the acquisition by the Board of Harbor Commissioners of a necessary area for a tidal basin for wharves, piers, etc., in San Francisco. Litigation tied up action for several years. There have been sold of this issue bonds to the amount of $853,000.

INDIAN WAR BONDS ACTS OF 1857 AND 1860.

Indian war bonds amounting to $4,000, as shown in detail under schedule of bonded indebtedness, have matured and interest thereon expired.

VETERANS' WELFARE BONDS

These bonds were authorized under an act of 1921, in the sum of $10,000,000, of which there have been sold $4,000,000 during the seventy-fifth fiscal year. Interest on these bonds is to be paid out of the general fund, which interest will be reimbursed to the general fund when funds for the purpose are available.

Sacramento State Building Sinking and Interest Fund. This fund will be replenished by interest on investments and semiannual transfers from the general fund to pay interest on the Sacramento State Building bonds.

San Francisco State Building Sinking Fund. This fund is replenished by semiannual transfers from the general fund to pay principal and interest on the San Francisco State Building bonds.

In submitting this report, I desire to express appreciation for the cooperation of the various departments with the personnel of my office.

Respectfully submitted.

CHARLES G. JOHNSON,
State Treasurer.

Master Summary of Cash and Bond Investment, Held in Trust by the StateTreasurer, at the Close of the Seventy-fifth Fiscal Year, June 30, 1924.

Cash in vault and in banks (as per detail under report)	$30,047,867 28	
Bond investment, bonds held in trust (as per detail under report)	$23,027,138 34	
Combined total of cash and bonds owned by the state		$53,075,005 62

Summary of the Condition of Cash in Treasury and in Banks on June 30, 1924.

Item	Detail	Totals
Cash in vault and counter	$21,305 96	
Sight exchange	2,453,424 50	
Total cash and sight exchange		$2,474,730 46
Bank balance (inactive accounts)	$25,519,650 00	
Bank balance (active accounts)	2,053,486 82	
Total cash in banks		27,573,136 82
Balance to credit of the State Treasurer		$30,047,867 28

Summary of Balance, Gross Cash Receipts and Disbursements of the Treasury of the State of California for the Seventy-fourth and Seventy-fifth Fiscal Years.

Fiscal Year Ending June 30, 1923.	
July 1, 1922, cash balance	$32,260,029 96
Receipts during the seventy-fourth fiscal year	81,393,047 97
Combined total	$113,653,077 93
Disbursements during seventy-fourth fiscal year	88,708,391 29
June 30, 1923, balance in State Treasury	$24,944,686 64
Fiscal Year Ending June 30, 1924.	
July 1, 1923, cash balance	$24,944,686 64
Receipts during the seventy-fifth fiscal year	105,219,928 59
Combined total	$130,164,615 23
Disbursements during seventy-fifth fiscal year	100,116,747 95
June 30, 1924, balance in State Treasury	$30,047,867 28

(The above figures incorporate bond sales.)

Summary of Monthly Balances, Cash Receipts and Disbursements During the Seventy-fourth Fiscal Year, Ending June 30, 1923.

Year and month	Balances	Receipts	Disbursements
1922—			
July 1	$32,260,029 96		
July	29,478,902 74	$2,554,005 57	$5,335,132 79
August	31,101,553 83	7,580,642 89	5,957,991 80
September	24,403,804 34	12,904,215 00	19,601,964 49
October	20,142,740 72	2,672,221 54	6,933,285 16
November	16,791,384 53	1,951,089 34	5,302,445 53
December	15,351,891 25	6,569,935 47	8,009,428 75
1923—			
January	19,018,989 02	9,560,260 63	5,893,162 86
February	33,375,791 92	18,655,244 26	4,298,441 36
March	29,870,452 94	7,094,747 90	10,600,086 88
April	25,788,366 85	3,274,802 53	4,356,888 62
May	29,075,031 66	5,632,015 46	5,345,350 65
June	24,944,686 64	2,943,867 38	7,074,212 40
Totals		$81,393,047 97	$88,708,391 29

Summary of Monthly Balances, Cash Receipts and Disbursements During the Seventy-fifth Fiscal Year Ending, June 30, 1924.

Year and month	Balances	Receipts	Disbursements
1923—			
July 1	$24,944,686 64		
July	23,697,715 93	$4,039,404 42	$5,286,375 13
August	27,141,713 88	11,896,412 55	8,452,414 60
September	22,821,854 31	13,396,098 94	17,715,958 51
October	16,502,954 13	2,187,716 70	8,506,616 88
November	19,686,120 69	11,210,075 96	8,026,909 40
December	19,744,845 87	6,552,099 23	6,493,374 05
1924—			
January	19,045,340 40	4,520,023 34	5,219,528 81
February	30,447,686 01	23,285,662 77	11,883,317 16
March	28,830,130 22	4,707,742 34	6,325,298 13
April	31,052,001 96	8,404,999 51	6,183,127 77
May	32,099,997 34	8,830,264 51	7,782,269 13
June 30, 1924	30,047,867 28	6,189,428 32	8,241,558 38
Totals		$105,219,928 59	$100,116,747 95

Summary of Interest Received by the State on Bank Deposits.

The following is a comparative schedule showing the interest received by the state on moneys deposited with banks.

Fiscal year, 1910-11	$102,950 35	Fiscal year, 1917-18	$318,310 46
Fiscal year, 1911-12	163,412 60	Fiscal year, 1918-19	349,276 90
Fiscal year, 1912-13	198,368 72	Fiscal year, 1919-20	395,602 06
Fiscal year, 1913-14	247,032 45	Fiscal year, 1920-21	454,326 96
Fiscal year, 1914-15	278,377 43	Fiscal year, 1921-22	690,007 28
Fiscal year, 1915-16	259,218 77	Fiscal year, 1922-23	748,196 68
Fiscal year, 1916-17	211,131 74	Fiscal year, 1923-24	911,280 31

Statement of Bonded Debt as of June 30, 1924, of the State of California.

Issue	Interest dates	Rate	Total authorized	Amount redeemed	Date of bonds	Maturity	Outstanding	Unsold
†Funded Debt of 1873, Act of 1870		6%	$2,801,000	$523,500			$2,277,500	
State Highway	January and July 3	4%	18,000,000	2,800,000	1911	Serially July 3, 1917-61	15,200,000	
S. F. Harbor Improvement Act, 1909	January and July 2	4%	9,000,000	None	1911	July 2, 1985, callable by lot after 1950	9,000,000	
State University Building	January and July 5	4½%	1,800,000	160,000	1915	$40,000 serially January 5, 1921-65	1,640,000	
S. F. State Building	January and July 2	4%	1,000,000	160,000	1915	$20,000 serially July 2, 1916-65	840,000	
S. F. Harbor Improvement Act, 1913	January and July 2	4%	10,000,000	None	1915	January 2, 1989, callable by lot after 1954	3,000,000	$7,000,000
State Highway Act, 1915	January and July 3	4½%	15,000,000	375,000	1917	Serially July 3, 1923-62	14,625,000	
India Basin	January and July 2	4%	1,000,000	None	1911	Callable by lot after 1939 Maturity 1985, $1,000 yearly	853,000	147,000
Indian War Bonds 1857	Expired		3,500			Expired $3,500	4,000	
Indian War Bonds 1860	Expired		500			Expired 500		
Sacramento Building	January and July 2	4%	3,000,000	None	1915	July 2, 1965	3,000,000	
State Highway								
*Const. Amend., 1915	January and July 3	4½%	40,000,000	None	1919	July 3, 1926-37 $5,122,000		
*Const. Amend., 1919	January and July 3	5¼%		None	1919	July 3, 1926-28 2,000,000		
*Const. Amend., 1919	January and July 3	5¾%		None	1921	July 3, 1928-42 9,878,000		
*Const. Amend., 1919	January and July 3	5%		None	1921	July 3, 1943-49 7,000,000		
*Const. Amend., 1919	January and July 3	4¼%		None	1922	July 3, 1950-59 10,000,000		
*Const. Amend., 1919	January and July 3	4¾%		None	1924	July 3, 1960-62 3,000,000	37,000,000	¶3,000,000
Veterans' Welfare Act, 1921	Feb. and Aug. 1	4½%	10,000,000	None	1924	February 1, 1925-45	4,000,000	6,000,000
	Totals		$111,605,000	$4,018,500		Totals	$91,439,500	$16,147,000

*On November 8, 1920, by a vote of the people of the State of California, the State Board of Finance was authorized to raise the coupon rate of interest on the unsold balance of these bonds up to and including 6%. To June 30, 1924, $21,878,000 of these bonds, bearing the rates of 4¾%, 5%, 5¼%, and 5¾%, maturing 1926 to 1962, inclusive, have been sold.

*Total Highway Bonds outstanding, $37,000,000.

¶On June 26, 1924, there will be offered for sale $3,000,000 4½% State of California Highway Bonds, the remaining lot of the $10,000,000 issue. (This date was postponed to July 10, 1924, and said bonds were sold on that date.)

†These bonds are owned by the State and held in trust by the State Treasurer for the benefit of the following funds: School fund, $1,5 6,500; University fund, $751,000.

The interest on the above bonds is paid in accordance with an Act of the Legislature dated March 3, 1893.

Summary of Bonds and Securities Deposited with State Treasurer, as per Detail in this Report, for the Seventy-fifth Fiscal Year, Ending June 30, 1924.

Surety bonds deposited with the State Treasurer by Industrial Accident Commission	$3,490,000 00
Liberty bonds deposited with the State Treasurer by Industrial Accident Commission	813,000 00
Trust companies securities held by the State Treasurer under the State Bank Act	11,429,087 50
Surety bonds deposited with the State Treasurer securing transportation companies who have issued letters of credit under the State Bank Act	250,000 00
Securities deposited with the State Treasurer for insurance corporations by Insurance Commissioner, for protection of policyholders	19,276,158 37
Bonds deposited with State Treasurer by investment companies	55,250 00
Debenture securities deposited with the State Treasurer by debenture companies	16,991 70
Combined total	$35,330,487 57

Summary of Balances of Bond Investments for the Seventy-fourth and Seventy-fifth Fiscal Years Ending June 30, 1923 and 1924.

	Seventy-fourth fiscal year balance	Seventy-fifth fiscal year balance
School Land Fund	$8,743,969 84	$9,088,138 34
Estates Deceased Persons Fund	922,000 00	1,106,000 00
State Compensation Insurance Fund	5,356,000 00	5,800,600 00
School Teachers Permanent Fund	1,528,400 00	1,771,400 00
General Fund (Surplus)	4,463,500 00	3,821,000 00
Dissolved Savings Banks	54,000 00	53,000 00
Torrens Title Assurance Fund	20,000 00	23,000 00
Sacramento State Building Fund	220,000 00	280,000 00
University Fund	751,000 00	751,000 00
Nurses' Registration Fund	13,000 00	33,000 00
General Fund (Reclamation Warrants purchased by Board of Control).	300,000 00	300,000 00
Totals	$22,371,869 84	$23,027,138 34

SUMMARY OF CASH RECEIPTS

Summary of Cash Receipts during the Seventy-fourth Fiscal Year, Summary of Transfer Receipts, Total Cash and Transfer Pay

Funds	Cash receipts	Transfer receipts	Total of cash and transfer receipts
Accident Prevention Fund	$145,829 22		$145,829 22
Adult Blind Fund	62,166 84		62,166 84
Agnews Hospital Contingent Fund	137,712 86		137,712 86
Agricultural Society Contingent Fund	107,7 8 11		107,7 8 11
Aircraft Fund	30 30		30 30
Aircraft Operators Fund	36 00		36 00
Architectural Revolving Fund	83,990 30		83,990 30
Ballot Paper Revolving Fund	46,539 66		46,539 66
Banking Fund	211,351 80		211,351 80
Bar Examination Fund	13,635 00		13,635 00
Bond Investment Fund	182,646 25		182,646 25
Building and Loan Inspection Fund	13,273 58		13,273 58
California Irrigation Board Revolving Fund			
Cattle Protection Fund	82,897 41		82,897 41
Chemistry Fund	33,339 91		33,339 91
Chico Teachers College Contingent Fund	21,778 55		21,778 55
Chiropractic Examiners' Fund	17,675 00		17,675 00
City of Redding, etc			
Compensation Insurance Fund	6,269,348 17		6,269,348 17
Corporation Commission Fund	368,358 56		368,358 56
Court of Appeal, First Dist., Library Fund No. 1	1,867 75		1,867 75
Court of Appeal, Second Dist., Library Fund No. 2	2,462 60		2,462 60
Court of Appeal, Third Dist., Library Fund No. 3	342 75		342 75
Deaf and Blind Schools Contingent Fund	13,655 44		13,655 44
Dentristy Fund	17,634 18		17,634 18
Detective License Fee Fund	1,270 00		1,270 00
Dissolved Savings Bank Fund	3,432 50		3,432 50
Estates of Deceased Persons Fund	173,384 76		173,384 76
Fish Exchange Fund	22,388 40		22,388 40
Fish and Game Preservation Fund	619,261 26		619,261 26
Folsom Hospital Contingent Fund			
Folsom Prison Fund	23,202 95		23,202 95
Fresno Teachers College Contingent Fund	9,221 20		9,221 20
General Fund	41,253,793 47	$1,173,257 07	42,427,050 54
Girls,' Training School for, Contingent Fund	996 74		996 74
Grain Standard Fund	4,296 13		4,296 13
High School Fund		3,305,982 35	3,305,982 35
Highway Fund No. 1	100,000 00		100,000 00
Highway Interest and Sinking Fund No. 1		1,024,000 00	1,024,000 00
Highway Fund No. 2	800,265 01		800,265 01
Highway Interest and Sinking Fund No. 2		1,050,000 00	1,050,000 00
Highway Fund No. 3	10,433,274 10		10,433,274 10
Highway Interest and Sinking Fund No. 3	18,771 00	1,348,034 00	1,366,805 00
Humboldt Teachers College Contingent Fund	2,312 08		2,312 08
Indian Basin Fund			
Indian Basin Sinking Fund		42,649 99	42,649 99
Industrial Accident Fund	3,535 50		3,535 50
Industrial Farm for Women Contingent Fund	1,018 60		1,018 60
Industrial Rehabilitation Fund			
Insurance Commissioner's Special Fund	60,124 19		60,124 19
Interest and Sinking Fund		141,435 00	141,435 00
Junior College Fund	695,344 90		695,344 90
Jute Revolving Fund	243,708 41		243,708 41
Kern County High School	73,585,905 82	8,251,978 41	
Labor Bureau Fund	20,889 70		20,889 70
Land Settlement Fund	59,923 72		59,923 72
Library Fund	937 10	147,950 00	148,887 10
Los Angeles Normal School Bldg. and Imp. Fund			
Market Commission Fund	1,577 34	18,620 00	20,197 34
Meat Hygiene Fund	33,505 54		33,505 54
Medical Examiners' Contingent Fund	89,366 00		89,366 00
Medical Examiners' Trust Fund			
Mendocino Hospital Contingent Fund	113,862 05		113,862 05
Mining Bureau Fund	5,809 10		5,809 10
Motor Vehicle Fund	10,479,183 54		10,479,183 54
Napa State Farm	4,357 06		4,357 06
Napa Hospital Contingent Fund	149,589 22		149,589 22
Nautical School Fund			
Needles School District Bond Fund			
Norwalk Hospital Contingent Fund	52,341 08		52,341 08
Nurses' Examination and Registration Fund	26,708 10		26,708 10
Operators' License			
Optometry Fund	5,060 50		5,060 50
Osteopathic Examiners' Contingent Fund	7,469 00		7,469 00
Pacific Colony Contingent Fund	5,214 00	50 00	5,264 00
Panama-California International Exposition Fund			

AND PAYMENTS.

Receipts and Payments, Balances Brought Forward July 1, 1922, Total Cash and ments, and Balances Carried Forward June 30, 1923.

Balances brought forward July 1, 1922	Total of receipts and balances	Cash payments	Transfer payments	Total of cash and transfer payments	Balances carried forward June 30, 1923
$13,229 89	$159,059 11	$143,964 62		$143,964 62	$15,094 49
16,809 43	78,976 27	56,223 34		56,223 34	22,752 93
84,587 84	222,300 70	27,175 60		27,175 60	195,125 10
27,778 85	135,506 96	134,720 81		134,720 81	786 15
83 15	113 45				113 45
170 00	206 00				206 00
7,189 82	91,180 12	81,359 92		81,359 92	9,820 20
82 97	46,662 63	32,853 24	$63 00	32,916 24	13,706 39
69,770 15	281,121 95	186,732 83		186,732 83	94,389 12
4,678 95	18,313 95	6,746 50		6,746 50	11,567 45
	182,646 25		182,646 25	182,646 25	
15,253 16	28,526 74	13,345 52		13,345 52	15,181 22
4,840 00					4,840 00
17,171 86	100,069 27	84,771 98		84,771 98	15,297 29
6,827 26	40,167 17	37,036 28		37,036 28	3,130 89
1,872 80	23,651 35	20,416 40		20,416 40	3,234 95
	17,675 00	2,501 60		2,501 60	15,173 40
57,356 18		57,356 18		57,356 18	
136,798 07	6,406,146 24	6,344,179 68		6,344,179 68	61,966 56
306,478 01	674,836 57	188,594 49		188,594 49	486,242 08
2,920 41	4,788 16	3,096 62		3,096 62	1,691 54
13 63	2,476 23	2,000 10		2,000 00	476 13
832 58	1,175 33	486 73		486 73	688 60
4,888 52	18,543 96	7,622 64		7,622 64	10,921 32
9,383 76	27,017 94	14,630 70		14,630 70	12,387 24
3,198 01	4,468 01	1,061 49		1,061 49	3,406 52
16,535 74	19,968 24	193 87		193 87	19,774 37
106,419 74	279,804 50	189,579 80		189,579 80	90,224 70
10,413 04	32,801 44	20,600 20		20,600 20	12,201 24
68,286 56	687,547 82	521,089 53		521,089 53	166,458 29
179 00					179 00
12,740 31	35,943 26	23,312 00		23,312 00	12,631 26
6,386 52	15,607 72	6,599 32		6,599 32	9,008 40
7,378,205 09	49,805,255 63	21,510,211 49	23,452,622 74	44,962,834 23	4,842,421 40
2,636 50	3,632 24	235 00		235 00	3,397 24
2,224 74	6,520 87	6,314 28		6,314 28	206 59
197 65	3,306,180 00	3,306,031 44		3,306,031 44	148 56
	100,000 00	100,000 00		100,000 00	
	1,024,000 00	1,024,000 00		1,024,000 00	
46,169 97	846,434 98	94,696 18		94,696 18	751,738 80
	1,050,000 00	1,050,000 00		1,050,000 00	
7,010,824 30	17,444,098 40	16,102,707 41		16,102,707 41	1,341,390 99
	1,366,805 00	1,359,725 00		1,359,725 00	7,080 00
867 69	3,179 77	1,157 69		1,157 69	2,022 08
451 28					451 28
	42,649 99	34,120 00	8,529 99	42,649 99	
5,885 94	9,421 44	32 00		32 00	9,389 44
350 20	1,368 80				1,368 80
3,323 29					3,323 29
83,477 50	143,601 69	61,217 81		61,217 81	82,383 88
70,717 50	212,152 50	141,435 00		141,435 00	70,717 50
777,061 32	1,472,406 22	21,300 00	755,761 32	777,061 22	695,344 90
141,277 68	384,986 09	383,466 17		383,466 17	1,519 92
140 15		140 15		140 15	
9,823 28	30,712 98	13,012 42		13,012 42	17,700 56
5,972 46	65,896 18	63,060 97		63,060 97	2,835 21
18,392 27	167,279 37	138,932 11		138,932 11	28,347 26
3 32					3 32
11,423 78	31,621 12	23,721 21		23,721 21	7,899 91
2,594 76	36,100 30	31,783 26		31,783 26	4,317 04
95,000 90	184,366 90	74,598 28		74,598 28	109,768 62
136,805 96	250,668 01	40,824 15		40,824 15	209,843 86
1,677 37	7,486 47	6,408 62		6,408 62	1,077 85
7,269,472 30	17,748,655 84	8,803,029 50		8,803,029 50	8,945,626 34
2,467 74	44,824 80	41,563 98		41,563 98	3,260 82
96,338 86	245,928 08	34,945 86		34,945 86	210,982 22
24,957 10					24,957 10
183 75					183 75
23,051 65	75,392 73	458 48		458 48	74,934 25
9,870 47	36,578 57	14,603 62		14,603 62	21,974 95
30,659 30					30,659 30
3,663 28	8,723 78	7,654 15		7,654 15	1,069 63
	7,469 00	2,838 56		2,838 56	4,630 44
13,152 94	18,416 94	93 91		93 91	18,323 03
11 88					11 88

SUMMARY OF CASH RECEIPTS

Summary of Cash Receipts during the Seventy-fourth Fiscal Year, Summary of Transfer Receipts, Total Cash and Transfer Pay

Funds	Cash receipts	Transfer receipts	Total of cash and transfer receipts
Panama-Pacific International Exposition Fund	$50 00		$50 00
Petroleum and Gas Fund	186,439 73		186,439 73
Pharmacy Board Contingent Fund	1,304 60		1,304 60
Polytechnic School Contingent Fund	42,804 36		42,804 36
Preston School of Industry Contingent Fund	1,414 42		1,414 42
Printing Fund	535,848 56		535,848 56
Purchasing Department Revolving Fund	286,049 79		286,049 79
Railroad Commission Fund	105,568 86		105,568 86
Railway Tax Fund			
Real Estate Commission Fund	227,810 30		227,810 30
Receivers' Fund			
Reclamation Board Revolving Fund	64,128 29		64,128 29
Sacramento State Building Fund	368 28		368 28
Sacramento State Bldg. Interest and Sinking Fund	8,330 00	$220,000 00	228,330 00
Sacramento Drainage District Fund			
Sacramento and San Joaquin Drainage Dist. No. 1	39,421 17		39,421 17
Sacramento and San Joaquin Drainage Dist. No. 2	1,120 84		1,120 84
Sacramento and San Joaquin Drainage Dist. No. 3	1,315 25		1,315 25
Sacramento and San Joaquin Drainage Dist. No. 4	245 28		245 28
Sacramento and San Joaquin Drainage Dist. No. 5	4 98		4 98
Sacramento and San Joaquin Drainage Dist. No. 6	67,743 65		67,743 65
San Diego Harbor Improvement Fund	1,114 25		1,114 25
San Diego Teachers College Contingent Fund	12,629 76		12,629 76
San Francisco Harbor Improvement Fund	2,623,016 23		2,623,016 23
San Francisco State Bldg., Int. and Sinking Fund		54,400 00	54,400 00
San Francisco State Building Fund	83 12		83 12
San Francisco Seawall Sinking Fund No. 1		142,599 98	142,599 98
San Francisco Seawall Fund No. 2			
San Francisco Seawall Sinking Fund No. 2		450,000 00	450,000 00
San Francisco Seawall Fund No. 3			
San Francisco Seawall Sinking Fund No. 3		150,000 00	150,000 00
San Francisco Teachers College Contingent Fund	8,198 22		8,198 22
San Jose Harbor Improvement Fund			
San Jose Normal School Contingent Fund	14,096 58		14,096 58
San Quentin Prison Fund	180,034 83		180,034 83
San Quentin Prison Mfg. Revolving Fund	161,050 04		161,050 04
Santa Barbara Teachers College Contingent Fund	10,202 22		10,202 22
School Book Fund	11,284 53		11,284 53
School Fund	469,041 68	13,227,351 72	13,696,393 40
School Land Deposit Fund			
School Land Fund	654,622 28	91,323 13	745,945 41
Sixth Dist. Agricultural Assn. Contingent Fund	469 35		469 35
Sonoma Home Contingent Fund	47,505 62		47,505 62
Southern California Hospital Contingent Fund	101,715 25		101,715 25
Stallion Registration Board Contingent Fund	609 75		609 75
Standard Apple Fund	28,221 24		28,221 24
Standardization Fund	74,955 31		74,955 31
State University Fund	188,302 79	2,014,649 32	2,202,952 11
Stockton Hospital Contingent Fund	104,825 25		104,825 25
Supt. Capitol Bldg. and Grounds Revolving Fund			
Supreme Court Library Fund	1,637 14		1,637 14
Tax Land Fund	1,939 91		1,939 91
Teachers' Permanent Fund	570,687 25	317,232 22	887,919 47
Teachers' Retirement Fund	1,879 89	371,750 00	373,629 89
Testing Fee Fund	1,800 00		1,800 00
Textbook Royalty Fund			
Torrens Title Assurance Fund	1,748 42		1,748 42
Transfer and Operators' License Fund	579,992 70		579,992 70
United States Forest Reserve Fund	157,191 34		157,191 34
University Fund	49,845 00		49,845 00
University of Cal. Bldg., Int. and Sinking Fund		116,500 00	116,500 00
Veterans' Dependents Education Fund		1,939 91	1,939 91
Veterans' Farm and Home Building Fund	60,522 84	700,000 00	760,522 84
Veterans' Home Support and Maintenance Fund	74,604 29	220,000 00	294,604 29
Veterans' Welfare Fund			
Veterinary Medicine Examiners' Contingent Fund	280 00		280 00
Vocational Education Fund	180,002 29	176,088 29	356,090 58
Vocational Rehabilitation Fund	30,252 76	30,054 51	60,307 27
War Bond Fund			
Warehouse Standardization Fund	14 00		14 00
Water Commission Revolving Fund	247 91		247 91
Whittier School Contingent Fund	20,761 08		20,761 08
Totals	$81,393,047 97	$26,535,867 49	$107,928,915 46

AND PAYMENTS—Continued.

Receipts and Payments, Balances Brought Forward July 1, 1922, Total Cash and ments, and Balances Carried Forward June 30, 1923.

Balances brought forward July 1, 1922	Total of receipts and balances	Cash payments	Transfer payments	Total of cash and transfer payments	Balances carried forward June 30, 1923
$14,014 56	$14,064 56				$14,064 56
18,517 13	204,956 86	$161,903 84		$161,903 84	43,053 02
53,026 20	54,330 80				54,330 80
12,826 71	55,631 07	34,734 06		34,734 06	20,897 01
2,241 68	3,656 10	760 06		760 06	2,896 04
76,802 23	612,650 79	604,940 51		604,940 51	7,710 28
139,981 23	426,031 02	309,363 43		309,363 43	116,667 59
47,556 90	153,125 76	41,750 16		41,750 16	111,375 60
30,251 36					30,251 36
95,546 46	323,356 76	127,085 47	$42,990 97	170,076 44	153,280 32
8,434 56					8,434 56
13,134 81	77,263 10	74,431 99		74,431 99	2,831 11
2,835,539 28	2,835,907 56	349,025 67		349,025 67	2,486,881 89
1,014 29	229,344 29	178,808 82		178,808 82	50,535 47
138 84					138 84
15,866 47	55,287 64	48,273 53		48,273 53	7,014 11
	1,120 84	1,120 84		1,120 84	
9,254 32	10,569 57	4,035 89		4,035 89	6,533 68
19,895 91	20,141 19	15,877 45		15,877 45	4,263 74
	4 98	4 98		4 98	
54,187 60	121,931 25	120,797 74		120,797 74	1,133 51
6,300 36	7,414 61				7,414 61
2,623 64	15,253 40	8,361 25		8,361 25	6,892 15
349,886 06	2,972,902 29	1,821,507 83	689,213 32	2,510,721 15	462,181 14
	54,400 00	54,400 00		54,400 00	
126,351 27	126,434 39	108,802 86		108,802 86	17,631 53
47,548 75	190,148 73	121,900 00	10,349 99	132,249 99	57,898 74
1,000 00					1,000 00
	450,000 00	360,000 00	90,000 00	450,000 00	
908,396 43		355,737 52		355,737 52	552,658 91
	150,000 00	120,000 00	30,000 00	150,000 00	
1,199 20	9,397 42	1,936 79		1,936 79	7,460 63
2,495 27					2,495 27
3,867 07	17,963 65	6,565 79		6,565 79	11,397 86
3,352 97	183,387 80	178,772 69		178,772 69	4,615 11
24,723 22	185,773 26	175,334 26		175,334 26	10,439 00
1,816 39	12,018 61	3,211 45		3,211 45	8,807 16
268,877 07	280,161 60	264,060 13		264,060 13	16,101 47
243,129 81	13,939,523 21	13,774,689 35		13,774,689 35	164,832 86
4,780 00					4,780 00
164,164 67	910,110 08	704,988 93		704,988 93	205,121 15
4,275 83	4,745 18				4,745 18
49,121 54	96,627 16	226 22		226 22	96,400 94
95,301 68	197,016 93	84,984 30		84,984 30	112,032 63
704 99	1,314 74	538 97		538 97	775 77
9,047 12	37,268 36	24,817 76		24,817 76	12,450 60
9,988 13	84,943 44	72,579 50		72,579 50	12,363 94
23,904 05	2,226,856 16	2,224,588 48		2,224,588 48	2,267 68
72,651 79	177,477 04	8,733 79		8,733 79	168,743 25
6,218 33					6,218 33
6,472 23	8,109 37	6,712 24		6,712 24	1,397 13
	1,939 91		1,939 91	1,939 91	
56,896 93	944,816 40	487,068 35	371,750 00	858,818 35	85,998 05
586 84	374,216 73	373,487 07		373,487 07	729 66
2,943 73	4,743 73	1,102 45		1,102 45	3,641 28
340 43					340 43
20,343 32	22,091 74	19,356 53		19,356 53	2,735 21
394,362 54	884,355 24	642,271 27		642,271 27	242,083 97
1,459 57	158,650 91	158,650 91		158,650 91	
	49,845 00	49,845 00		49,845 00	
	116,500 00	116,500 00		116,500 00	
755 01	2,694 92				2,694 92
950,000 00	1,710,522 84	980,296 68	450,000 00	1,430,296 68	280,226 16
29,142 45	323,746 74	285,047 35		285,047 35	38,699 39
450,000 00			450,000 00	450,000 00	
629 94	909 94	260 93		260 93	649 01
154,813 22	510,903 80	260,103 35		260,103 35	250,800 45
12,806 99	73,114 26	61,279 78		61,279 78	11,834 48
2,829 76					2,829 76
	14 00				14 00
49,583 93	49,831 84	13,995 87		13,995 87	35,835 97
43,598 51	64,359 59	190 51		190 51	64,169 08
$32,260,029 96	$140,188,945 42	$88,708,391 29	$26,535,867 49	$115,244,258 78	$24,944,686 64

SUMMARY OF CASH RECEIPTS

Summary of Cash Receipts during the Seventy-fifth Fiscal Year, Summary of Transfer Receipts, Total Cash and Transfer Pay

Funds	Cash receipts	Transfer receipts	Total of cash and transfer receipts
Accident Prevention Fund	$20,790 27	$738 30	$21,528 57
Adult Blind Fund	85,318 14	9,890 56	95,208 70
Agnews Hospital Contingent Fund	84,795 90	28,116 40	112,912 30
Agricultural Society Contingent Fund	81,517 67	10,076 79	91,594 46
Aircraft Fund			
Aircraft Operators' Fund			
Architectural Revolving Fund	91,612 74		91,612 74
Ballot Paper Revolving Fund	14,827 86		14,827 86
Banking Fund	232,000 73		232,000 73
Bar Examination Fund	10,020 00	720 00	10,740 00
Bond Investment Fund	315,315 62	85,000 00	400,315 62
Building and Loan Inspection Fund	15,102 78		15,102 78
California Irrigation Board Revolving Fund			
Cattle Protection Fund	77,907 56	9,090 65	86,998 21
Chemistry Fund	20,828 32	11,316 00	32,144 32
Chico Teachers College Contingent Fund	1,349 77	6 00	1,355 77
Chiropractic Examiners' Fund	19,800 00	325 00	20,125 00
Chiropractic Examiners' Trust Fund	400 00		400 00
Compensation Insurance Fund	6,915,606 95		6,915,606 95
Corporation Commission Fund	275,121 21	467,768 21	742,889 42
Corporation Commission Trust Fund	100 00		100 00
Court of Appeal, First Dist., Library Fund No. 1	894 07	736 80	1,630 87
Court of Appeal, Second Dist., Library Fund No. 2	2,031 14	626 12	2,657 26
Court of Appeal, Third Dist., Library Fund No. 3	432 25	32 50	464 75
Deaf and Blind Schools Contingent Fund	5,442 14	970 60	6,412 74
Dentistry Fund	17,202 45	96 45	17,298 90
Detective License Fee Fund	380 00	1,240 00	1,620 00
Dissolved Savings Bank Fund	3,377 50	20,297 86	23,675 36
Education, Department of, Contingent Fund	16,870 00	100 00	16,970 00
Embalmers' Fund	16,052 93		16,052 93
Estates of Deceased Persons Fund	200,486 13		200,486 13
Equalization Emblem Revolving Fund	429 80	5,000 00	5,429 80
Fish Exchange Fund	8,583 60	7,989 50	16,573 10
Fish and Game Preservation Fund	507,894 22	49,166 58	557,060 80
Folsom Hospital Contingent Fund			
Folsom Prison Fund	19,015 15	2,442 69	21,457 84
Forestry, Board of, Fire Prevention Fund	33,089 53		33,089 53
Fresno Teachers College Contingent Fund	3,554 50	4 55	3,559 05
General Fund	57,907,605 59	3,736,105 56	61,643,711 15
Girls,' Training School for, Contingent Fund	446 38	35 70	482 08
Grain Standardization Fund	4,311 17	1,446 54	5,757 71
High School Fund		3,765,691 44	3,765,691 44
Highway Commission General Fund	284,207 46		284,207 46
Highway Condemnation	300 00		300 00
Highway Interest and Sinking Fund No. 1		1,008,000 00	1,008,000 00
Highway Fund No. 2	1,349,316 69		1,349,316 69
Highway Interest and Sinking Fund No. 2		1,033,125 00	1,033,125 00
Highway Fund No. 3	10,193,401 01		10,193,401 01
Highway Interest and Sinking Fund No. 3	34,909 70	1,750,425 30	1,785,335 00
Highway Maintenance Fund		2,766,943 03	2,766,943 03
Humboldt Teachers College Contingent Fund	2,208 05		2,208 05
India Basin Fund			
India Basin Sinking Fund		34,120 00	34,120 00
Industrial Accident Fund	1,985 95	313 20	2,299 15
Industrial Farm for Women Contingent Fund	853 68	263 50	1,117 18
Industrial Rehabilitation Fund			
Insurance Commissioner's Special Fund	3,538 04	60,000 00	63,538 04
Interest and Sinking Fund		141,435 00	141,435 00
Junior College Fund	247,152 06		247,152 06
Jute Revolving Fund	312,218 75	90,000 00	402,218 75
Labor Bureau Fund	22,525 00	840 00	23,365 00
Land Settlement Fund	61,588 94		61,588 94
Library Fund	1,251 21	172,984 08	174,235 29
Los Angeles Normal School Bldg. and Imp. Fund			
Market Commission Fund	1,081 27	420 50	1,501 77
Meat Hygiene Fund	48,847 18	11,786 23	60,633 41
Medical Examiners' Contingent Fund	98,641 86	10,741 35	109,383 21
Medical Examiners' Trust Fund	77,085 20		77,085 20
Mendocino Hospital Contingent Fund	24,678 75	6,556 84	31,235 59
Mining Bureau Fund	5,084 35	896 50	5,980 85
Motor Vehicle Fund No. 1	960,447 04	1,905,859 65	2,866,306 69
Motor Vehicle, Chapter 266, 1923	5,848,868 25		5,848,868 25
Motor Vehicle Fuel Fund	5,996,577 30		5,996,577 30
Motor Vehicle Testing Fee Fund	4,050 00		4,050 00
Napa Hospital Contingent Fund	108,630 58	23,099 99	131,730 57
Nautical School Fund			
Needles School District Bond Fund			
Norwalk Hospital Contingent Fund	34,368 52	6,345 94	40,714 46
Nurses' Examination and Registration Fund	31,093 28	2,925 00	34,018 28
Operators' License			

AND PAYMENTS—Continued.

Receipts and Payments, Balances Brought Forward July 1, 1923, Total Cash and ments, and Balances Carried Forward June 30, 1924.

Balances brought forward July 1, 1923	Total of receipts and balances	Cash payments	Transfer payments	Total of cash and transfer payments	Balances carried forward June 30, 1924
$15,094 49	$36,623 06	$35,316 72		$35,316 72	$1,306 34
22,752 93	117,961 63	76,128 03		76,128 03	41,833 60
195,125 10	308,037 40	293,651 16		293,651 16	143,386 24
786 15	92,380 61	45,911 21		45,911 21	46,469 40
113 45	113 45		$113 45	113 45	
206 00	206 00		86 90	86 90	119 10
9,820 20	101,432 94	92,861 04		92,861 04	8,571 90
13,706 39	28,534 25	3,382 96		3,382 96	25,151 29
94,389 12	326,389 85	202,310 95		202,310 95	124,078 90
11,567 45	22,307 45	7,157 00		7,157 00	15,150 45
	400,315 62		400,315 62	400,315 62	
15,181 22	30,284 00	14,166 50		14,166 50	16,117 50
4,840 00	4,840 00				4,840 00
15,297 29	102,295 50	75,484 50		75,484 50	26,811 00
3,130 89	35,275 21	30,364 63		30,364 63	4,910 58
3,234 95	4,590 72	4,202 66		4,202 66	388 06
15,173 40	35,298 40	2,087 01		2,087 01	33,211 39
400 00	400 00				400 00
61,966 56	6,977,573 51	6,829,058 06		6,829,058 06	148,515 45
486,242 08	1,229,131 50	169,699 42	400,000 00	569,699 42	659,432 08
	100 00	100 00		100 00	
1,691 54	3,322 41	1,832 00		1,832 00	1,490 41
476 13	3,133 39	1,675 91		1,675 91	1,457 48
688 60	1,153 35	677 50		677 50	475 85
10,921 32	17,334 06	16,752 74		16,752 74	581 32
12,387 24	29,686 14	10,381 49		10,381 49	19,304 65
3,406 52	5,026 52	363 59		363 59	4,662 93
19,774 37	43,449 73	297 86	20,000 00	20,297 86	23,151 87
	16,970 00	5,720 05		5,720 05	11,249 95
	16,052 93	283 76		283 76	15,769 17
90,224 70	290,710 83	242,393 84		242,393 84	48,316 99
	5,429 80	957 91		957 91	4,471 89
12,201 24	28,774 34	4,916 16		4,916 16	23,858 18
166,458 29	723,519 09	481,959 64		481,959 64	241,559 45
179 00	179 00				179 00
12,631 26	34,089 19	33,826 85		33,826 85	262 25
	33,089 53	26,819 51		26,819 51	6,270 02
9,008 40	12,567 45	12,394 79		12,394 79	172 66
4,842,421 40	66,486,132 55	24,802,725 67	29,849,668 76	54,652,394 43	11,833,738 12
3,397 24	3,879 32	3,773 63		3,773 63	105 69
206 59	5,964 30	5,846 22		5,846 22	118 08
148 56	3,765,840 00	3,765,214 24		3,765,214 24	625 76
	284,207 46	12,250 85		12,250 85	271,956 61
	300 00				300 00
	1,008,000 00	1,008,000 00		1,008,000 00	
751,738 80	2,101,055 49	1,085,269 24		1,085,269 24	1,015,786 25
	1,033,125 00	1,033,125 00		1,033,125 00	
1,341,390 99	11,534,792 00	10,503,822 25		10,503,822 25	1,030,969 75
7,080 00	1,792,415 00	1,792,415 00		1,792,415 00	
	2,766,943 03	1,041,998 16		1,041,998 16	1,724,944 87
2,022 08	4,230 13	2,833 03		2,833 03	1,397 10
451 28	451 28				451 28
	34,120 00	34,120 00		34,120 00	
9,389 44	11,688 59	11,202 93		11,202 93	485 66
1,368 80	2,485 98	1,594 56		1,594 56	891 42
3,323 29	3,323 29				3,323 29
82,383 88	145,921 92	60,445 42	2,901 40	63,346 82	82,575 10
70,717 50	212,152 50	141,435 00		141,435 00	70,717 50
695,344 90	942,496 96	112,600 00	582,744 90	695,344 90	247,152 06
1,519 92	403,738 67	133,949 33	90,000 00	223,949 33	179,789 34
17,700 56	41,065 56	34,179 25		34,179 25	6,886 31
2,835 21	64,424 15	58,981 54		58,981 54	5,442 61
28,347 26	202,582 55	104,480 10	50,000 00	154,480 10	48,102 45
3 32	3 32				3 32
7,899 91	9,401 68	9,257 81		9,257 81	143 87
4,317 04	64,950 45	48,268 56		48,268 56	16,681 89
109,768 62	219,151 83	71,129 13		71,129 13	148,022 70
	77,085 20	70,202 95		70,202 95	6,882 25
209,843 86	241,079 45	239,249 10		239,249 10	1,830 35
1,077 85	7,058 70	5,475 69		5,475 69	1,583 01
8,945,626 34	11,811,933 03	9,878,369 05	1,875,000 00	11,753,369 05	58,563 98
	5,848,868 25	389,583 93		389,583 93	5,459,284 32
	5,996,577 30	3,133,731 81	2,766,943 03	5,900,674 84	95,902 46
	4,050 00	2,386 00		2,386 00	1,664 00
210,982 22	342,712 79	323,042 58		323,042 58	19,670 21
24,957 10	24,957 10				24,957 10
183 75	183 75				183 75
74,934 25	115,648 71	112,762 10		112,762 10	2,886 61
21,974 95	55,993 23	29,966 97		29,966 97	26,026 26
30,659 30	30,695 30		30,659 30	30,659 36	

SUMMARY OF CASH RECEIPTS

Summary of Cash Receipts during the Seventy-fifth Fiscal Year, Summary of Transfer Receipts, Total Cash and Transfer Pay

Funds	Cash receipts	Transfer receipts	Total of cash and transfer receipts
Optometry Fund	$4,691 49	$2,176 00	$6,867 49
Osteopathic Examiners' Contingent Fund	13,345 50	684 00	14,029 50
Pacific Colony Contingent Fund	5,602 16	20,155 68	25,757 84
Panama-California International Exposition Fund			
Panama-Pacific International Exposition Fund			
Petroleum and Gas Fund	42,770 74	175,676 47	218,447 21
Pharmacy Board Contingent Fund	65,029 47		65,029 47
Pharmacy Board Poison Law Fund	19,837 00		19,837 00
Polytechnic School Contingent Fund	10,445 76	628 45	11,074 21
Napa State Farm Contingent Fund			
Preston School of Industry Contingent Fund	1,427 81	65 00	1,492 81
Printing Fund	544,793 89	48,572 12	593,366 01
Purchasing Department Revolving Fund	319,924 64		319,924 64
Railroad Commission Fund	94,320 00	6,060 81	100,380 81
Railroad Commission Trust Fund	2,253 33		2,253 33
Railway Tax Fund			
Real Estate Commission Fund	246,705 94	21,147 35	267,853 29
Receivers' Fund			
Reclamation Board Revolving Fund	5,564 75		5,564 75
Sacramento State Building Fund	953 51		953 51
Sacramento State Bldg., Int. and Sinking Fund	10,860 00	120,000 00	130,860 00
Sacramento Drainage District Fund		1 89	1 89
Sacramento and San Joaquin Drainage Dist. No. 1	62,335 06		62,335 06
Sacramento and San Joaquin Drainage Dist. No. 3	1,978 27		1,978 27
Sacramento and San Joaquin Drainage Dist. No. 4	14 40		14 40
Sacramento and San Joaquin Drainage Dist. No. 6	53,453 54		53,453 54
Sacto. and San Joaquin Drg. Dist. No. 6 Emer. Fd.	237 33	895,147 75	895,385 08
San Diego Harbor Improvement Fund	264 75	363 30	628 05
San Diego Teachers College Contingent Fund	4,632 20	614 66	5,246 86
San Francisco Harbor Improvement Fund	2,639,274 56	728,777 08	3,368,051 64
San Francisco State Bldg., Int. and Sinking Fund		53,600 00	53,600 00
San Francisco State Building Fund	37 09		37 09
San Francisco Seawall Sinking Fund No. 1		59,800 00	59,800 00
San Francisco Seawall Fund No. 2			
San Francisco Seawall Sinking Fund No. 2		360,000 00	360,000 00
San Francisco Seawall Fund No. 3			
San Francisco Seawall Sinking Fund No. 3		120,000 00	120,000 00
San Francisco Teachers College Contingent Fund	1,266 74	1,079 45	2,346 19
San Jose Harbor Improvement Fund			
San Jose Normal School Contingent Fund	9,985 67	221 41	10,207 08
San Quentin Prison Fund	36,701 18	5,869 92	42,571 10
San Quentin Prison Mfg. Revolving Fund	152,340 98		152,340 98
Santa Barbara Teachers College Contingent Fund	4,653 55	821 00	5,474 55
School Book Fund	9,957 64	580,803 65	590,761 29
School Fund	464,828 78	14,141,981 39	14,606,810 17
School Land Deposit Fund			
School Land Fund	490,300 97	157,921 31	648,222 28
Signal Device Testing Fee Fund	1,000 00		1,000 00
Sixth Dist. Agricultural Assn. Contingent Fund	1,805 05		1,805 05
Sixth Dist. Agricultural Assn. Trust Fund	2,158 75		2,158 75
Sonoma Home Contingent Fund	42,825 72	8,657 70	51,483 42
Southern California Hospital Contingent Fund	79,968 14	17,091 23	97,059 37
Stallion Registration Board Contingent Fund	437 50	14 00	451 50
Standard Apple Fund	30,254 53	5,777 78	36,032 31
Standardization Fund	191,551 13	4,639 00	236,190 13
State University Fund	208,305 23	2,155,674 77	2,363,980 00
Stockton Hospital Contingent Fund	83,452 28	14,733 63	98,185 91
Supt. Capitol Bldg. and Grounds Revolving Fund			
Suspense Fund	876,915 01		876,915 01
Supreme Court Library Fund	1,654 40	348 12	2,002 52
Tax Land Fund	2,303 73		2,303 73
Teachers' Permanent Fund	384,146 61	268,897 52	653,044 13
Teachers' Retirement Fund	4,092 63	404,111 16	408,203 79
Testing Fee Fund	300 00		300 00
Textbook Royalty Fund			
Torrens Title Assurance Fund	1,276 15		1,276 15
Transfer and Operators' License Fund	280,019 82		280,019 82
United States Forest Reserve Fund	318,339 67		318,339 67
University Fund	49,845 00		
University of Cal. Bldg., Int. and Sinking Fund		114,700 00	114,700 00
Veterans' Dependents Education Fund		2,303 73	2,303 73
Veterans' Farm and Home Building Fund	4,290,811 10	750,000 00	5,040,811 10
Veterans' Home Support and Maintenance Fund	69,665 96	252,114 08	321,780 04
Veterinary Medicine Examiners' Contingent Fund	320 00		320 00
Vocational Education Fund	169,188 81	157,164 81	326,353 62
Vocational Rehabilitation Fund	30,413 09	29,746 35	60,159 24
War Bond Fund			
Warehouse Standardization Fund	2,161 00	418 00	2,579 00
Water Commission Revolving Fund	189 19		189 19
Whittier School Contingent Fund	10,315 20	820 37	11,135 57
Totals	$105,219,928 59	$38,931,492 85	$144,151,421 44

AND PAYMENTS—Concluded.

Receipts and Payments, Balances Brought Forward July 1, 1923, Total Cash and ments, and Balances Carried Forward June 30, 1924.

Balances brought forward July 1, 1923	Total of receipts and balances	Cash payments	Transfer payments	Total of cash and transfer payments	Balances carried forward June 30, 1924
$1,069 63	$7,937 12	$3,878 35		$3,878 35	$4,058 77
4,630 44	18,659 94	9,140 15		9,140 15	9,519 79
18,323 03	44,080 87		$20,000 00	20,000 00	24,080 87
11 88	11 88				11 88
14,064 56	14,064 56				14,064 56
43,053 02	261,500 23	148,317 09	50,000 00	198,317 09	63,183 14
54,330 80	119,360 27	41,598 95		41,598 95	77,761 32
	19,837 00	3,070 00		3,070 00	16,767 00
20,897 01	31,971 22	31,453 47		31,453 47	517 75
3,260 82	3,260 82	3,260 82		3,260 82	
2,896 04	4,388 85	4,005 10		4,005 10	383 75
7,710 28	601,076 29	553,364 71		553,364 71	47,711 58
116,667 59	436,592 23	316,624 43		316,624 43	119,967 80
111,375 60	211,756 41	209,817 85		209,817 85	1,938 56
	2,253 33		2,253 33	2,253 33	
30,251 36	30,251 36				30,251 36
153,280 32	421,133 61	118,129 39	117,366 12	235,495 51	185,638 10
8,434 56	8,434 56				8,434 56
2,831 11	8,395 86	4,068 85		4,068 85	4,327 01
2,486,881 89	2,487,835 40	1,189,253 15		1,189,253 15	1,298,582 25
50,535 47	181,395 47	181,107 54		181,107 54	287 93
138 84	140 73				140 73
7,014 11	69,349 17	34,064 06	1 89	34,065 95	35,283 22
6,533 68	8,511 95	1,323 40		1,323 40	7,188 55
4,263 74	4,278 14	1,054 03		1,054 03	3,224 11
1,133 51	54,587 05	53,343 26		53,343 26	1,243 79
	895,385 08	530,885 05	285,147 75	816,032 80	79,352 28
7,414 61	8,042 66	609 28		609 28	7,433 38
6,892 15	12,139 01	11,437 27		11,437 27	701 74
462,181 14	3,830,232 78	1,702,340 40	1,073,920 00	2,776,260 40	1,053,972 38
	53,600 00	53,600 00		53,600 00	
17,631 53	17,668 62	13,904 11		13,904 11	3,764 51
57,898 74	117,698 74	117,300 00	398 74	117,698 74	
1,000 00	1,000 00				1,000 00
	360,000 00	360,000 00		360,000 00	
552,658 91	552,658 91	413,474 38		413,474 38	139,184 53
	120,000 00	120,000 00		120,000 00	
7,460 63	9,806 82	9,747 98		9,747 98	58 84
2,495 27	2,495 27				2,495 27
11,397 86	21,604 94	21,110 55		21,110 55	494 39
4,615 11	47,186 21	41,452 27		41,452 27	5,733 94
10,439 00	162,779 98	120,620 98		120,620 98	42,159 00
8,807 16	14,281 71	13,964 80		13,964 80	316 91
16,101 47	606,862 76	275,805 35		275,805 35	331,057 41
164,832 86	14,771,643 03	14,640,465 61	137 50	14,640,603 11	131,039 92
4,780 00	4,780 00				4,780 00
205,121 15	853,343 43	688,684 91	297 86	688,982 77	164,360 66
	1,000 00	270 00		270 00	730 00
4,745 18	6,550 23	6,550 23		6,550 23	
	2,158 75				2,158 75
96,400 94	147,884 36	147,877 39	6 40	147,883 79	57
112,032 63	209,092 00	208,875 84		208,875 84	216 16
775 77	1,227 27	564 25		564 25	663 02
12,450 60	48,482 91	28,476 00		28,476 00	20,006 91
12,363 94	208,554 07	161,331 20		161,331 20	47,222 87
2,267 68	2,366,247 68	2,365,592 59		2,365,592 59	655 09
168,743 25	266,929 16	265,987 75		265,987 75	941 41
6,218 33	6,218 33				6,218 33
	876,915 01		876,915 01	876,915 01	
1,397 13	3,399 65	2,364 43		2,364 43	1,035 22
	2,303 73		2,303 73	2,303 73	
85,998 05	739,042 18	272,819 87	434,111 16	706,931 03	32,111 15
729 66	408,933 45	407,430 48		407,430 48	1,502 97
3,641 28	3,941 28	1,230 00		1,230 00	2,711 28
340 43	340 43				340 43
2,735 21	4,011 36	2,898 66		2,898 66	1,112 70
242,083 97	522,103 79	360,388 12		360,388 12	161,715 67
	318,339 67	318,339 67		318,339 67	
	49,845 00	49,845 00		49,845 00	
	114,700 00	114,700 00		114,700 00	
2,694 92	4 998 65				4,998 65
280,226 16	5,321,037 26	3,865,669 98		3,865,669 98	1,455,367 28
38,699 39	360,479 43	240,698 39	200 00	240,898 39	119,581 04
649 01	969 01	153 25		153 25	815 76
250,800 45	577,154 07	309,053 63		309,053 63	268,100 44
11,834 48	71,993 92	55,769 79		55,769 79	16,224 13
2,829 76	2,829 76				2,829 76
14 00	2,593 00	2,538 53		2,538 53	54 47
35,835 97	36,025 16	23,574 59		23,574 59	12,450 57
64,169 08	75,304 65	74,648 22		74,648 22	656 43
$24,944,686 64	$169,096,108 08	$100,116,747 95	$38,931,492 85	$139,048,240 80	$30,047,867 28

RECONCILIATION OF BALANCE SHEETS

Disclosing the Volume of Business Transacted for the Biennial Period Beginning July 1, 1922, and Ending June 30, 1924.

(Balance, Cash Receipts, Transfer Receipts and Cash and Transfer Payments.)

SEVENTY-FOURTH (74TH) FISCAL YEAR.

July 1, 1922, cash balance	$32,260,029 96		
Cash receipts	81,393,047 97		
Total cash receipts and balance		$113,653,077 93	
Total transfer receipts		26,535,867 49	
Combined total			$140,188,945 42
Cash payments	$88,708,391 29		
Transfer payments	26,535,867 49		
Combined payments			115,244,258 78
June 30, 1923, cash balance			$24,944,686 64

SEVENTY-FIFTH (75TH) FISCAL YEAR.

July 1, 1923, cash balance	$24,944,686 64		
Cash receipts	105,219,928 59		
Total cash receipts and balance		$130,164,615 23	
Total transfer receipts		38,931,492 85	
Combined total			$169,096,108 08
Cash payments	$100,116,747 95		
Transfer payments	38,931,492 85		
Combined payments			139,048,240 80
June 30, 1924, cash balance to credit of treasury			$30,047,867 28

STATE TREASURER'S CONTINGENT FUND.

Expenditures from the State Treasurer's Contingent Fund for the Seventy-fourth Fiscal Year, 1922-23.

July, 1922	Telephones	$17 03
	Postage	150 00
	Post office box rent	4 00
	Adams Towel Supply	2 00
	Allen's Press Clipping Bureau	3 00
	State Purchasing Agent (office supplies)	18 18
	Frances M. Drake (stenographer)	14 00
	Printing	21 25
Aug., 1922	Telephones	20 45
	Postage	140 00
	Postal Telegraph Company	40
	State Purchasing Agent (office supplies)	19 51
	Allen's Press Clipping Bureau	3 00
	Mrs. E. T. O'Connor (stenographer)	63 00
	Burroughs Adding Machine (repairing)	1 60
	Printing	103 70
Sept., 1922	Telephones	24 05
	Postage	100 00
	Post office box rent	4 00
	Adams Towel Supply (August and September)	4 00
	Stamp deposit at post office	1 00
	Western Union Telegraph Company	2 54
	Postal Telegraph Company	6 86
	Allen's Press Clipping Bureau	3 00
	State Purchasing Agent (office supplies)	12 54
	Wilma Campbell (stenographer)	38 50
	Helen Ferrero (stenographer)	80 00
	Printing	97 60
Oct., 1922	Telephones	31 45
	Postage	100 00
	Postal Telegraph Company	40
	Adams Towel Supply	2 00
	State Purchasing Agent (office supplies)	14 93
	Mrs. Laura Gambach (pasting coupons)	14 08
	Printing	16 50
	Printing	16 75
	Allen's Press Clipping Bureau	3 00
Nov., 1922	Telephones	20 65
	Postage	100 00
	Adams Towel Supply	2 00
	State Purchasing Agent (office supplies)	21 86
	Columbia Market (janitor supplies)	68
	Stockwell Lock Inspection Company	12 00
	Mrs. Laura Gambach (pasting coupons)	11 88
	Mrs. Laura Gambach (pasting coupons)	47 96
	Printing	57 80
Dec., 1922	Telephones	24 50
	Post office box rent	4 00
	Stamp deposit at post office	1 00
	Adams Towel Supply	2 00
	Western Union Telegraph	52
	Allen's Press Clipping Bureau	17 73
	Printing	425 27
	Allen's Press Clipping Bureau	3 00
Jan., 1923	Postage	110 00
	Telephones	32 65
	Western Union and Postal Telegraph Companies	8 08
	Allen's Press Clipping Bureau	3 00
	Towel Service	2 00
	Traveling Expenses (official business)	9 00
	State Purchasing Agent (office supplies)	20 37
Feb., 1923	Postage	50 00
	Telephones	25 75
	Western Union and Postal Telegraph Companies	83
	Allen's Press Clipping Bureau	2 00
	Adams Towel Supply	2 00
	State Purchasing Agent (office supplies)	11 95
	State Printing Department	44 45
	State Printing Department	292 13
	Miscellaneous (H. S. Crocker and Company, diary)	60
	New Equipment, Wahl Stationery Company	57 38
	Repairs (Sacramento Furniture Company)	18 00
	Norme Morrill (seasonal help)	10 50

STATE TREASURER'S CONTINGENT FUND—Continued.

Expenditures from the State Treasurer's Contingent Fund for the Seventy-fourth Fiscal Year, 1922-23.

Mar., 1923—	Postage	$50 00
	Post office box rent	4 00
	Telephones	29 25
	Western Union and Postal Telegraph Companies	1 13
	Allen's Press Clipping Bureau	2 00
	Adams Towel Service	2 00
	Traveling Expenses (official business)	72 75
	Traveling Expenses (official business)	29 25
	State Purchasing Agent (office supplies)	12 79
	Printing Department	30 40
	E. C. Secor (stenographer)	125 00
	New equipment (Wahl Stationery Company)	7 12
April, 1923—	Telephones	23 20
	Allen's Press Clipping Bureau	6 80
	Adams Towel Service	2 00
	Traveling Expenses (official business)	67 59
	Traveling Expenses (official business)	29 25
	State Purchasing Department (office supplies)	7 78
	State Printing Department	14 85
	New Equipment (Underwood)	85 05
	Repairs (Underwood)	1 00
May, 1923—	Postage	50 00
	Telephones	9 25
	Western Union and Postal Telegraph Companies	40
	Western Union and Postal Telegraph Companies	1 08
	Allen's Press Clipping Bureau	4 45
	Traveling Expenses (official business)	3 50
	Traveling Expenses (official business)	24 00
	Adams Towel Service	2 00
	State Purchasing Department	7 43
	State Printing Department	32 90
June, 1923—	Postage	50 00
	Postage	50 00
	Telephones	29 60
	Western Union and Postal Telegraph Companies	5 55
	Adams Towel Service	2 00
	Repairs (Burroughs Adding machine)	2 40
	Repairs (Stockwell Lock Company, inspecting locks)	3 00
Total disbursements		$3,488 63
Balance, June 30, 1923		55
Total budget		$3,489 18
Reconciliation of disbursements:		
Printing		$1,075 45
General disbursements		2,413 18
Total disbursements		$3,488 63

STATE TREASURER'S CONTINGENT FUND—Continued.

Expenditures from the State Treasurer's Contingent Fund for the Seventy-fifth Fiscal Year, 1923-24.

July, 1923—	Postage	$75 00
	Postage	60 00
	Post office box rent	4 00
	Telephones	6 85
	Telephones	18 30
	Telegraph	30
	Allen's Press Clipping Bureau	12 45
	Adams Towel Service	2 00
	Traveling Expenses	23 75
	New equipment (burglar alarm)	1 62
	Printing	196 33
	Purchasing Department (office supplies)	13 12
Aug., 1923—	Postage	125 00
	Telephones	16 80
	Telegraph	2 55
	Allen's Press Clipping Bureau	4 02
	Traveling Expenses (official business)	63 70
	Towel service	2 00
	Purchasing Department (office supplies)	20 53
	Printing	178 13
	Seasonal help (Harriet Desmond)	72 00
	Stationery and supplies	2 25
	New equipment (file boxes)	7 50
Sept., 1923—	Postage	30 00
	Post office box rent	4 00
	Telephones	29 70
	Telegraph	3 99
	Telegraph	2 68
	Allen's Press Clipping Bureau	3 00
	Towel Service	2 00
	Purchasing Department (office supplies)	4 92
	New equipment	48 34
Oct., 1923—	Postage	50 00
	Telephones	30 65
	Telegraph	29
	Telegraph	3 34
	Allen's Press Clipping Bureau	2 00
	Towel Service	2 00
	Purchasing Department	15 28
Nov., 1923—	Telephones	27 60
	Telegraph	2 91
	Telegraph	1 50
	Towel Service	2 00
	Traveling Expenses	45 25
	Purchasing Department (office supplies)	13 41
	Printing	140 45
	Miscellaneous	50
	New equipment	5 26
	Repairs	17 00
	New equipment (Pacific States Electric Company)	100 38
	Repairs	1 55
Dec., 1923—	Postage	50 60
	Post office box rent	4 00
	Telephones	17 40
	Telegraph	1 13
	Telegraph	7 75
	Allen's Press Clipping Bureau	2 00
	Towel Service	2 00
	Purchasing Department (office supplies)	11 27
	Printing	32 90
	Miscellaneous (janitor)	1 60
Jan., 1924—	Postage	100 00
	Telephones	20 05
	Telegraph	3 40
	Telegraph	2 13
	Allen's Press Clipping Bureau	6 47
	Towel Service	2 00
	Traveling Expenses (official business)	78 30
	Purchasing Department (office supplies)	11 28
	Printing	32 00
	Insurance on bonds	4 15
	Seasonal help (Margaret Silva)	48 00
	Seasonal help (Mildred Morey)	36 00
	Miscellaneous (janitor)	4 41
	New equipment (Wahl Stationery Company)	21 65

STATE TREASURER'S CONTINGENT FUND—Concluded.

Expenditures from the State Treasurer's Contingent Fund for the Seventy-fifth Fiscal Year, 1923-24.

Feb., 1924—Postage			$90 00
Telephones			40 70
Telegraph			3 15
Allen's Press Clipping Bureau			3 00
Towel Service			2 00
Purchasing Department (office supplies)			13 46
Printing			37 40
Seasonal help (Mildred Morey)			106 00
New equipment (Forbes Supply Company)			6 33
Miscellaneous (Friend and Terry)			10 04
New equipment (Pacific States Alarm)			1 64
Repairs (Sinclair and Bessy)			3 50
Mar., 1924—Telephones			33 30
Telegraph			4 34
Telegraph			5 52
Towel Service			2 00
Purchasing Department (office supplies)			6 82
April 1924—Telephones			38 20
Telegraph			3 34
Telegraph			3 53
Towel Service			2 00
Traveling expenses (official business)			56 52
Purchasing Department (office supplies)			8 98
Printing			103 95
New equipment (Valley Seed Company)			1 10
New equipment (California Mechanical Electric Company)			1 00
Miscellaneous (Pacific Underwriter Banker)			8 00
Postage			80 00
May, 1924—Postage			40 00
Pacific Telephones			26 35
Telegraph			1 40
Telegraph			1 15
Allen's Press Clipping Bureau			9 00
Towel Service			2 00
Purchasing Department (office supplies)			10 13
Printing			97 05
Insurance on bonds			3 35
Insurance on bonds			4 06
Repairs (Sleeper Stamp Company)			7 00
Post office box rent			4 00
Printing			208 80
Miscellaneous			2 53
June, 1924—Postage			85 00
Telephones			16 61
Telegraph			4 62
Towel Service			2 00
Purchasing Department (office supplies)			18 13
Printing			139 10
Insurance on bonds			3 45
Seasonal help (Flora Woolworth)			40 00
Miscellaneous (California Pine Company)			3 84
Total disbursements			$3,404 08
Less credits:—			
Discount on new equipment		$2 63	
Excess Telephone bill		1 55	
Total credited to General Fund			4 18
Total disbursements			$3,399 90
Balance (credit) June 30, 1924			10
Total budget			$3,400 00
Reconciliation of disbursements:			
Printing			$1,166 11
General disbursements			2,233 79
Total disbursements			$3,399 90

BONDS HELD IN TRUST.

Transactions in "Bonds Purchased as Investments," Held in Trust, by the State Treasurer, for the Various Funds, for the Seventy-fourth Fiscal Year.

School Land Fund.			
Bonds on hand July 1, 1922	$8,484,312 42		
Additional investments	313,000 00		
Reclamation warrants	156,844 92		
Redemption of bonds		$210,187 50	
Interest collected		(334,571 21)	
Balance on hand June 30, 1923			$8,743,969 84
Estates of Deceased Persons Fund.			
Bonds on hand July 1, 1922	$844,000 00		
Additional investments	132,000 00		
Redemption of bonds		$54,000 00	
Interest collected		(38,450 17)	
Balance on hand June 30, 1923			$922,000 00
State Compensation Insurance Fund.			
Bonds on hand July 1, 1922	$5,208,500 00		
Additional investments	967,000 00		
Redemptions and sales		$819,500 00	
Interest collected		(272,277 54)	
Balance on hand June 30, 1923			$5,356,000 00
School Teachers Permanent Fund.			
Bonds on hand July 1, 1922	$1,321,950 00		
Additional investments	430,500 00		
Redemptions and sales		$224,050 00	
Interest collected		(62,196 13)	
Balance on hand June 30, 1923			$1,528,400 00
General Surplus Fund.			
Bonds on hand July 1, 1922	$4,463,500 00		
Additional i vestments	3,000,000 00		
Bonds sold		$3,000,000 00	
Interest collected		(112,840 00)	
Balance on hand June 30, 1923			$4,463,500 00
Dissolved Savings Bank Fund.			
Bonds on hand July 1, 1922	$55,000 00		
Redemption of bonds		$1,000 00	
Interest collected		(2,432 50)	
Balance on hand			$54,000 00
Torrens Title Assurance Fund.			
Bonds on hand July 1, 1922	$20,000 00		
Interest collected		($400 00)	
Balance on hand June 30, 1923			$20,000 00
Sacramento State Building Sinking and Interest Fund.			
Bonds on hand July 1, 1922	$160,000 00		
Additional investments		$60,000 00	
Interest collected		(8,330 00))	
Balance on hand June 30, 1923			$220,000 00
University Fund.			
Bonds on hand July 1, 1922	$751,000 00		
Interest collected		$45,060 00	
Endowments as per statutes		(4,785 00)	
Balance on hand June 30, 1923			$751,000 00
Nurses Registration Fund.			
Bonds on hand July 1, 1922	$13,000 00		
Interest collected		$552 50	
Balance on hand June 30, 1923			$13,000 00
General Fund.			
Reclamation warrant purchased by the Board of Control as per Statutes of 1919, Chapter 7.			
Amount on hand	$300,000 00		
Total	$22,371,869 84		

BONDS HELD IN TRUST—Concluded.

Transactions in "Bonds Purchased as Investments," Held in Trust, by the State Treasurer, for the Various Funds, for the Seventy-fifth Fiscal Year.

School Land Fund.			
Bonds on hand July 1, 1923	$8,587,124 92		
Additional investments	626,431 00		
Reclamation warrants	156,844 92		
Redemptions of bonds		$282,262 50	
Interest collected for schools		(349,837 90)	
Balance on hand June 30, 1924			$9,088,138 34
Estates of Deceased Persons Fund.			
Bonds on hand July 1, 1923	$922,000 00		
Additional investments	205,000 00		
Redemption of bonds		$21,000 00	
Interest collected		(44,562 50)	
Balance on hand June 30, 1924			$1,106,000 00
State Compensation Insurance Fund.			
Bonds on hand July 1, 1923	$5,365,000 00		
Additional investments	1,257,600 00		
Redemptions and sales		$813,000 00	
Interest collected		(293,260 33)	
Balance on hand June 30, 1924			$5,800,600 00
School Teachers Permanent Fund.			
Bonds on hand July 1, 1923	$1,528,400 00		
Additional investments	245,000 00		
Redemptions and sales		$2,000 00	
Interest collected		(81,671 50)	
Balance on hand June 30, 1924			$1,771,400 00
General Surplus Fund.			
Bonds on hand July 1, 1923	$4,463,500 00		
Additional investments	1,000,000 00		
Sale of bonds		$1,642,500 00	
Interest collected		(251,245 37)	
Balance on hand June 30, 1924			$3,821,000 00
Dissolved Savings Banks Fund.			
Bonds on hand July 1, 1923	$54,000 00		
Redemptions		$1,000 00	
Interest collected		(2,432 50)	
Balance on hand June 30, 1924			$53,000 00
Torrens Title Assurance Fund.			
Bonds on hand July 1, 1923	$20,000 00		
Additional investments		$3,000 00	
Interest collected		(860 00)	
Balance on hand June 30, 1924			$23,000 00
Sacramento State Building Sinking and Interest Fund.			
Bonds on hand July 1, 1923	$220,000 00		
Additional investments		$60,000 00	
Interest collected		(10,860 00)	
Balance on hand June 30, 1924			$280,000 00
University Fund.			
Bonds on hand July 1, 1923	$751,000 00		
Interest collected		($45,060 00)	
Endowments and as per Statutes		(4,785 00)	
Balance on hand June 30, 1924			$751,000 00
Nurses Registration Fund.			
Bonds on hand July 1, 1923	$13,000 00		
Additional investment		$20,000 00	
Interest collected		(1,052 50)	
Balance on hand June 30, 1924			$33,000 00
General Fund.			
Reclamation warrants purchased by the Board of Control, as per Statutes of 1919, Chapter 7.			
Total amount of warrants on hand June 30, 1924	$300,000 00		
Total bond investment June 30, 1924	$23,027,138 34		

INTEREST COLLECTED FROM BANKS HAVING STATE DEPOSITS.

Month	Amount	Month	Amount
July—1922	$68,189 76	January—1923	$41,804 69
August	73,954 76	February	48,128 83
September	73,537 97	March	60,271 71
October	65,351 19	April	65 637 74
November	55,136 86	May	72,332 05
December	42,472 86	June	73,008 84

Total	$739,827 26
Interest received on deposits made with the Fiscal Agency, New York	8,369 42
Grand total	$748,196 68

INTEREST COLLECTED FROM BANKS HAVING STATE DEPOSITS.

Inactive Deposits. Month	Amount	*Active Deposits.* Month	Amount
July—1923	$72,228 84	July—1923	
August	73,257 39	August	
September	73,183 05	September	$164 38
October	58,954 58	October	888 13
November	52,333 96	November	4,140 52
December	46,064 83	December	4,013 23
January—1924	54,499 71	January—1924	4,457 82
February	78,154 72	February	8,033 31
March	88,963 34	March	4,376 32
April	87,199 49	April	5,044 53
May	89,789 59	May	5,976 47
June	88,001 22	June	4,404 91
Total	$862,630 72	Total	$41,499 62

Total of active and inactive interest	$904,130 34
Interest received on deposits made with the Fiscal Agency, New York	7,149 97
75th fiscal year, grand total of interest collected	$911,280 31
74th fiscal year, grand total of interest collected	748,196 68
Total amount collected from June 30, 1922, to June 30, 1924	$1,659,476 99
Total amount of funds on deposit June 30, 1923	$21,855,200 00
Total amount of funds on deposit June 30, 1924	27,573,136 82

TRUST SECURITIES

Trust Securities on Hand June 30, 1924, Received Through the State Superintendent of Banks in Conformity with the Law Authorizing Corporations to Act as Executors, Trustees, etc., under Section 96 of the Bank Act, Statutes of 1913, Chapter 104.

Companies	Court Trusts				Private Trusts			
	Location	Bonds	Mortgages	Mortgage guarantee certificates	Bonds	Mortgages	Mortgage guarantee certificates	Total
American Bank	San Francisco		$100,000 00		$105,000 00			$205,000 00
Anglo California Trust Company	San Francisco		100,000 00		120,000 00			220,000 00
Bank of America	Alameda	$51,000 00			51,000 00			102,000 00
Bank of America	Los Angeles	50,000 00		$50,000 00			$100,000 00	200,000 00
Bank of Italy	San Francisco	100,000 00			100,000 00			200,000 00
Bank of California, N. A.	San Francisco	120,000 00			120,000 00			240,000 00
Butte County National Bank	Chico	59,687 50			55,000 00			114,687 50
California National Bank	Long Beach	50,000 00			50,000 00			100,000 00
California Trust and Savings Bank	Sacramento		50,000 00		56,000 00			106,000 00
California Trust Company	Los Angeles			100,000 00			100,000 00	200,000 00
Commercial National Bank	Los Angeles	100,000 00			100,000 00			200,000 00
Capitol National Bank	Sacramento	57,000 00			57,000 00			114,000 00
Central National Bank	Oakland	116,000 00			112,000 00			228,000 00
Citizens Trust and Savings Bank	Los Angeles	50,000 00		100,000 00	100,000 00			250,000 00
Commercial Trust and Savings Bank	Oakland	101,700 00			103,000 00			204,700 00
County National Bank and Trust Co.	Santa Barbara	90,000 00		27,000 00	105,000 00			222,000 00
Crocker National Bank	San Francisco	100,000 00			100,000 00			200,000 00
Farmers and Merchants National Bank	Los Angeles	120,000 00			120,000 00			240,000 00
Farmers and Merchants Trust Co	Long Beach	57,500 00			57,500 00			115,000 00
Federal Trust and Sav. Bk of Hollywood	Hollywood			50,000 00	50,000 00			100,000 00
First Federal Trust Company	San Francisco	435,000 00			100,000 00			535,000 00
First National Bank	Chico	52,500 00			52,500 00			105,000 00
First National Bank	Santa Ana			50,000 00			50,000 00	100,000 00
First Natiojal Bank	Long Beach	50,000 00			50,000 00			100,000 00
First National Bank	Santa Barbara	76,000 00	34,650 00		39,000 00	866,300 00		215,950 00
First National Bank	Santa Paula	25,000 00	25,000 00		6,500 00	44,000 00		100,500 00
First Trust and Savings Bank	San Diego	50,000 00			50,000 00			100,000 00
First Trust and Savings Bank	Pasadena			200,000 00			100,000 00	300,000 00
Hellman Coml. Trust and Sav. Bank	Los Angeles	101,000 00			100,000 00			201,000 00
Humboldt Savings Bank	San Francisco	105,000 00			105,000 00			210,000 00
Long Beach National Bank	Long Beach	50,000 00			50,000 00			100,000 00
L. A. Trust and Safe Deposit Company	Los Angeles	101,000 00			101,000 00			202,000 00
Marine Trust and Savings Bank	Long Beach	52,000 00			50,000 00			102,000 00
Mercantile Trust Company	Berkeley	102,000 00			102,500 00			204,500 00
Mercantile Trust Company	San Francisco	86,000 00	425,000 00		117,000 00			628,000 00
Mercantile Trust Company	San Jose	57,000 00			57,000 00			114,000 00

National Bank of D. O. Mills and Co.	Sacramento	60,000 00			60,000 00			120,000 00
National Bank and Trust Company	Pasadena	55,000 00			50,000 00			105,000 00
Oakland Bank	Oakland	150,000 00			100,000 00			250,000 00
Orange Co. Trust and Savings Bank	Santa Ana		50,000 00			50,000 00		100,000 00
Pacific Southwest Trust and Sav. Bank	Los Angeles		210,000 00	300,000 00			100,000 00	610,000 00
Peoples Trust and Savings Bank	Riverside	52,750 00			52,500 00	4,000 00		109,250 00
San Diego Savings Bank	San Diego	50,000 00			50,000 00			100,000 00
Security Trust Company	Bakersfield		50,000 00			50,000 00		100,000 00
Security Trust and Savings Bank	Los Angeles	511,000 00			100,000 00			611,000 00
Spalding Company, The	Los Angeles	102,000 00			64,000 00		44,000 00	210,000 00
Southern Trust and Commerce Bank	San Diego		100,000 00			100,000 00		200,000 00
Title Guaranty and Trust Company		25,000 00		75,000 00	25,000 00		75,000 00	200,000 00
Title Insurance and Trust Company	Los Angeles	122,000 00		392,000 00	10,000 00		90,000 00	614,000 00
Union Trust Company	San Diego	2,000 00	51,500 00	1,500 00	15,500 00	26,500 00	13,500 00	110,500 00
Union Bank and Trust Company	Los Angeles			100,000 00			100,000 00	200,000 00
United Bank and Trust Company	San Francisco	105,000 00			105,000 00			210,000 00
Wells Fargo Bank and Union Trust Co.	San Francisco		500,000 00		100,000 00			600,000 00
Western Savings Bank	Long Beach	50,000 00			50,000 00			100,000 00
Totals		$3,850,137 50	$1,696,150 00	$1,445,500 00	$3,324,000 00	$340,800 00	$772,500 00	$11,429,087 50

Securities Received in Accordance with the Provisions of Section 13 of the Bank Act. Deposits to Secure Issuance of Foreign Exchange and Letters of Credit by Transportation Companies.

Company	Surety Bonds
Thos. Cook and Company and Fidelity Casualty Company of New York	$50,000 00
The Cunard Steamship Company, Limited, and Hartford Accident and Indemnity Company	50,000 00
American Express Company and American Surety Company of New York	50,000 00
International Merchant Marine Company and National Surety Company	50,000 00
North German Lloyd and American Surety Company of New York	50,000 00
Total	$250,000 00

INSURANCE SECURITIES.

Securities on Hand June 30, 1924, Received Through the State Insurance Commissioner, and Held by the State Treasurer for the Protection of Certain Policy Holders.

Companies	Bonds	Mortgages	Mortgage guaranty certificates	Total
Alameda County Title Insurance Company		$96,261 05		$96,26105
American Mutual Liability Insurance Company	$66,200 00			66,200 00
American Reinsurance Company	25,000 00			25,000 00
Associated Industries Insurance Company	25,000 00			25,000 00
Associated Insurance Company of California	15,000 00			15,000 00
California Casualty Indemnity Exchange	245,500 00			245,500 00
California Pacific Title Insurance Company		102,500 00		102,500 00
California State Life Insurance Company	7,500 00	1,881,860 00		1,889,360 00
Casualty Reciprocal Exchange	42,000 00			42,000 00
City Title Insurance Company		100,000 00		100,000 00
Consolidated Title Insurance Company	50,000 00			50,000 00
Contractors Indemnity Exchange	54,000 00			54,000 00
East Bay Title Insurance Company	103,000 00			103,000 00
Employers Indemnity Corporation	29,300 00			29,300 00
Federal Mutual Liability Insurance Company	276,000 00			276,000 00
Fireman's Fund Insurance Company	310,000 00			310,000 00
Georgia Casualty Company	27,000 00			27,000 00
Great Republic Life Insurance Company	239,500 00	724,323 52	$157,000 00	1,120,823 52
Hartford Steam Boiler Inspection and Insurance Company	2,000 00			2,000 00
Home Fire and Marine Insurance Company	210,000 00			210,000 00
International Indemnity Company	129,000 00			129,000 00
Laundry Owners Insurance Exchange of Southern California	25,000 00			25,000 00
Lumberman's Reciprocal Association	29,000 00			29,000 00
Manufacturers Indemnity Exchange	15,000 00			15,000 00
Metropolitan Life Insurance Company	20,000 00			20,000 00
National Automobile Insurance Company	20,000 00			20,000 00
New Amsterdam Casualty Company	115,000 00			115,000 00
New Zealand Insurance Company	251,000 00			251,000 00
North Carolina Home Insurance Company	11,000 00			11,000 00
Oakland Title Insurance Company		185,000 00		185,000 00
Occidental Life Insurance Company	200,000 00	2,362,681 90		2,562,681 90
Olds and Stoller Inter-Exchange Company	158,100 00			158,100 00
Orange County Title Insurance Company	5,500 00	95,000 00		100,500 00
Order Railway Employees	30,000 00			30,000 00
Pacific Employers Insurance Company	27,850 00			27,850 00
Pacific Mutual Life Insurance Company		2,287,051 00		2,287,051 00
Pacific Surety Company	86,000 00			86,000 00
Pioneer Title Insurance Company	33,000 00	57,500 00		90,500 00

Queensland Insurance Company	450,000 00			450,000 00
Railroad Men's Mutual Life Insurance Company	15,300 00			15,300 00
Republic Casualty Company	76,500 00			76,500 00
San Jose Abstract and Title Insurance Company	19,000 00	71,000 00		90,000 00
Security Title Insurance and Guaranty Company			100,000 00	100,000 00
Southern Title Guaranty Company	128,500 00			128,500 00
Title Guaranty and Trust Company			100,000 00	100,000 00
Title Insurance and Guaranty Company	30,000 00	21,000 00		51,000 00
Title Insurance and Trust Company	115,000 00			115,000 00
Union Central Life Insurance Company	20,000 00			20,000 00
Union Title Insurance Company	22,500 00	81,500 00		104,000 00
Vulcan Fire Insurance Company	50,000 00			50,000 00
Western Assurance Company of Toronto	105,000 00			105,000 00
Western Indemnity Company	36,300 00			36,300 00
Western Mutual Life Association	200,000 00			200,000 00
Western State Life Insurance Company	2,858,530 90	2,418,500 00		5,277,030 90
Western Title Insurance Company	101,000 00			101,000 00
West Coast Life Insurance Company	1,324,900 00			1,324,900 00
Totals	$8,434,980 90	$10,484,177 47	$357,000 00	$19,276,158 37

SECURITIES DEPOSITED BY INDUSTRIAL ACCIDENT COMMISSION.

Securities on Hand June 30, 1920, Deposited by the Industrial Accident Commission in Conformity with Section 29 (a) of the Workmen's Compensation Act, Chapter 586, Laws of 1917.

	Security bonds	Bonds
Alaska Packers Association	$20,000 00	
Albion Lumber Company	20,000 00	
Amazon Drilling Company	20,000 00	
American Can Company	20,000 00	
American District Telegraph Company, Arizona	20,000 00	
American District Telegraph Company, San Francisco	20,000 00	
American Railway Express Company	20,000 00	
American Smelting and Refining Company		$20,000 00
American Smelters Securities Company	20,000 00	
American Steel and Wire Company	20,000 00	
Arcata and Mad River Railroad Company	20,000 00	
Armour and Company		20,000 00
Armsby Company, J. K.	20,000 00	
Associated Oil Company	20,000 00	
Associated Pipe Line Company	20,000 00	
Associated Supply Company	20,000 00	
Atchison Topeka and Santa Fe Railway Company		20,000 00
Atlas Tank Manufacturing Company	20,000 00	
Azusa Foothill Citrus Company	20,000 00	
Baker Iron Works	20,000 00	
Bakersfield Iron Works	20,000 00	
Best Tractor Company, C. L.	20,000 00	
Bethlehem Shipbuilding Corporation	20,000 00	
Borden Company of California, The	20,000 00	
Brunswick-Balke-Collender Company	20,000 00	
Buffum's, Incorporated	20,000 00	
California Cap Company	20,000 00	
California Door Company, The	20,000 00	
California Packing Corporation	20,000 00	
California Portland Cement Company	20,000 00	
California Street Cable Railroad Company	20,000 00	
California Stevedore and Ballast Company		21,000 00
California Western Railway and Navigation Company	20,000 00	
Celluloid Zapon Company	20,000 00	
Chevrolet Motor Company of California	20,000 00	
Chicago Bridge and Iron Company		20,000 00
Claremont Oil Company	20,000 00	
Coast Manufacturing and Supply Company		20,000 00
Consolidated Lumber Company	20,000 00	
Coronado Water Company	20,000 00	
Cudahy Packing Company	20,000 00	
Diamond and Calder Railway	20,000 00	
Dolbeer and Carson Lumber Company		20,000 00
Eastman Kodak Company of New York		20,000 00
Elk River Mill and Lumber Company	20,000 00	
Engels Copper Mining Company	20,000 00	
Empire Mines and Investment Company	20,000 00	
Eureka Sash, Door and Moulding Mill		20,000 00
Fellows and Stewart, Incorporated	20,000 00	
Fort Bragg Electric Company	20,000 00	
Fresno City Water Corporation	20,000 00	
Fresno Traction Company	20,000 00	
Fruit Growers Supply Company	20,000 00	
General Electric Company	20,000 00	
Giant Powder Company, Consolidated, The	20,000 00	
Gladding McBean Company	20,000 00	
Godeau, Julius S.	20,000 00	
Golden State Milk Products Company	20,000 00	
Goodrich Rubber Company, The (B. F.)	20,000 00	
Graves Sash, Door and Mill Company (Frank)	20,000 00	
Great Western Power Company of California		20,000 00
Granitite Manufacturing Company	20,000 00	
Gustine, Bank of	20,000 00	
Hale Bros., Incorporated		20,000 00
Hammond Lumber Company		20,000 00
Haverty Company, Thomas	20,000 00	
Hemphill Packing Company	20,000 00	
Henry Cowell Lime and Cement Company	20,000 00	
Hercules Powder Company		20,000 00
Hobart Estate Company	20,000 00	
Hobbs, Wall and Company	20,000 00	
Hogan Lumber and Mill Company	20,000 00	
Holmes Eureka Lumber Company	20,000 00	
Home Telephone and Telegraph Company, Pasadena	20,000 00	
Howland and Dewey Company	20,000 00	
Humboldt Northern Railway Company	20,000 00	
Humboldt Stevedore Company	20,000 00	

SECURITIES DEPOSITED BY INDUSTRIAL ACCIDENT COMMISSION —Continued.

Securities on Hand June 30, 1920, Deposited by the Industrial Accident Commission in Conformity with Section 29 (a) of the Workmen's Compensation Act, Chapter 586, Laws of 1917.

	Security bonds	Bonds
Huntington Lake Hotel Company	$20,000 00	
Indian Valley Railroad Company	20,000 00	
International Harvester Company of America		$20,000 00
Jewel Tea Company	20,000 00	
Judson Manufacturing Company	20,000 00	
Lacy Manufacturing Company		20,000 00
Lakeview Oil Company	20,000 00	
Leland Stanford Junior University, The	20,000 00	
Little River Redwood Company, The	20,000 00	
Little Valley Lumber Company	20,000 00	
Llewelyn Iron Works		20,000 00
Los Angeles District Telegraph Company	20,000 00	
Los Angeles Gas and Electric Corporation	20,000 00	
Los Angeles Investment Company	20,000 00	
Los Angeles Lumber Products Company	20,000 00	
Los Angeles Lumber Products Steamship Company	20,000 00	
Los Angeles Railway Corporation	20,000 00	
Los Angeles Shipbuilding and Dry Dock Corporation	20,000 00	
Los Angeles and Salt Lake Railroad Company	20,000 00	
Los Banos, Bank of	20,000 00	
Lucerne Lumber Company	20,000 00	
Macauly Foundry Company (H. C.)		20,000 00
Madera Sugar Pine Company		20,000 00
Market Street Railway Company		20,000 00
Mendocino Lumber Company	20,000 00	
Merchants Fire Dispatch	20,000 00	
Midland Counties Public Service Corporation	20,000 00	
Midway Gas Company		21,000 00
Maxwell Hardware Company	20,000 00	
Metropolitan Stevedore Company	30,000 00	
Miller and Lux, Incorporated		20,000 00
Minton Company, The	20,000 00	
Monticello Steamship Company	20,000 00	
Moore Shipbuilding Company		10,000 00
Motor Transit Company	20,000 00	
Mutual Life Insurance Company of New York	20,000 00	
McCloud River Lumber Company	20,000 00	
Mt. Shasta Power Corporation	20,000 00	
Nakneck Packing Company		20,000 00
National Lead Company of California		20,000 00
National Biscuit Company		20,000 00
Nelson Company, The Charles	20,000 00	
Northern Redwood Lumber Company	20,000 00	
North Star Mines Company	20,000 00	
Northwestern Pacific Railroad Company	20,000 00	
Oakland Meat and Packing Company	20,000 00	
Oceanic Steamship Company		20,000 00
Olympic Salt Water Company	20,000 00	
Ontario and Upland Telephone Company	20,000 00	
Outer Harbor Dock and Wharf Company	20,000 00	
Overland Freight Transfer Company		20,000 00
Owl Drug Company	20,000 00	
Pacific Bone, Coal and Fertilizer Company	20,000 00	
Pacific Coast Coal Company	20,000 00	
Pacific Coast Railway Company	20,000 00	
Pacific Commercial Warehouse, Incorporated	20,000 00	
Pacific Electric Railway Company	20,000 00	
Pacific Fruit Express Company	20,000 00	
Pacific Gas and Electric Company	20,000 00	
Pacific Lumber Company, The	20,000 00	
Pacific Manufacturing Company	20,000 00	
Pacific Oil Company	20,000 00	
Pacific Ready-Cut Homes, Incorporated	20,000 00	
Pacific Tank and Pipe Company	20,000 00	
Pacific Telephone and Telegraph Company, The	20,000 00	
Pacific Wire Bound Box Company	20,000 00	
Pajaro Valley Consolidated Railroad Company	20,000 00	
Palmer and McBryde		21,000 00
Patten and Davies Lumber Company	20,000 00	
Pedersen, L. A.		20,000 00
Peninsular Railway Company	20,000 00	
Peoples Lumber Company		20,000 00
Postal Telegraph Cable Company	20,000 00	
Potrero Transit Company	20,000 00	
Prince and Company, H. G.	20,000 00	
Prudential Insurance Company of America, The	20,000 00	
Pullman Company, The		20,000 00
Red River Lumber Company, The	20,000 00	
Red Salmon Canning Company		20,000 00
Sacramento Valley Telephone Company	20,000 00	

SECURITIES DEPOSITED BY INDUSTRIAL ACCIDENT COMMISSION —Concluded.

Securities on Hand June 30, 1920, Deposited by the Industrial Accident Commission in Conformity with Section 29 (a) of the Workmen's Compensation Act, Chapter 586, Laws of 1917.

	Security bonds	Bonds
San Diego and Arizona Railway Company	$20,000 00	
San Diego and Coronado Ferry Company	20,000 00	
San Diego Electric Railway Company	20,000 00	
San Francisco Lumber Company	20,000 00	
San Joaquin and Eastern Railroad Company	20,000 00	
San Joaquin Light and Power Corporation		$20,000 00
San Joaquin and Kings River Canal and Irrigation Company	20,000 00	
San Jose Railroads	20,000 00	
Santa Barbara and Suburban Railway Company	20,000 00	
Santa Cruz Portland Cement Company		20,000 00
Selby Smelting and Lead Company	20,000 00	
Simmons Company		20,000 00
Smart and Final Company	20,000 00	
Sperry Flour Company	20,000 00	
Spring Valley Water Company	20,000 00	
Southern California Edison Company	20,000 00	
Southern California Gas Company		20,000 00
Southern California Hardwood and Manufacturing Company	20,000 00	
Southern California Telephone Company	20,000 00	
Southern Pacific Company	20,000 00	
Southern Pacific Milling Company		20,000 00
Spreckels Bros. Commercial Company	20,000 00	
Spreckels Securities Company (J. D. and A. B.)		20,000 00
Spreckels Sugar Company		20,000 00
Standard Lumber Company		20,000 00
Standard Oil Company of California	20,000 00	
Stockton Electric Railroad Company	20,000 00	
Sunset Lumber Company	20,000 00	
Threlkeld Commissary, M. C.	20,000 00	
Tilden Lumber Company	20,000 00	
Tilden Lumber and Mill Company	20,000 00	
Travelers Insurance Company	20,000 00	
Trojan Powder Company	20,000 00	
Tidewater Southern Railway Company	20,000 00	
Truscon Steel Company	20,000 00	
Union Lumber Company	20,000 00	
Union Oil Company of California	20,000 00	
Union Tank Car Company	20,000 00	
United Engineering Company	20,000 00	
U. S. Smelting, Refining and Mining Exploration Company	20,000 00	
United States Steel Products Company	20,000 00	
Valley Electrical Supply Company		20,000 00
Visalia Electric Railroad Company	20,000 00	
Welsbach Street Lighting Company of America	20,000 00	
West San Joaquin Valley Water Company	20,000 00	
West Coast Oil Company	20,000 00	
Weed Lumber Company	20,000 00	
Western California Fish Company	20,000 00	
Western Electric Company	20,000 00	
Western Meat Company	20,000 00	
Western Pacific Railroad Company	20,000 00	
Western Pipe and Steel Company of California	20,000 00	
Western Union Telegraph Company of N. Y.	20,000 00	
White Auto Company	20,000 00	
Wilson and Company, Incorporated, of California	20,000 00	
Wood Lumber Company	20,000 00	
Yosemite Lumber Company	20,000 00	
Youngs Market Company, Incorporated	20,000 00	
Totals	$3,490,000 00	$813,000 00

Securities on Deposit in Conformity with the Provisions of Section 635 (a) to 635 (1) of the Political Code. An Act to Regulate Investment Companies not Licensed by Bank or Other Commissioners.

Company	Location	Bonds
Investors Syndicate	Minneapolis, Minn.	$50,000 00
Mortgage Bond Company	Portland, Ore.	5,250 00
Total		$55,250 00

DEBENTURE SECURITIES.

Securities on Hand June 30, 1920, Deposited by Debenture Companies Under Provisions of Statute 2905, Chapter CLXIII.

Name of company deposited by	Kind of securities	Value
American Mutual Investment Company	Notes of sundry persons and bonds	$8,636 70
California Bond Corporation of California	Notes of sundry persons and bonds	8,167 00
	Cash	188 00
Total		$16,991 70

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STATE OF CALIFORNIA

SEVENTH REPORT

OF THE

Board of Architecture

List of Certified Architects

MEMBERS OF THE BOARD

WILLIAM J. DODD, President ..... Los Angeles
CLARENCE R. WARD, Vice-President ..... San Francisco
SYLVAIN SCHNAITTACHER, Sec'y-Treas. ..... San Francisco
A. M. EDELMAN, Asst. Sec'y-Treas. ..... Los Angeles
JOHN PARKINSON ..... Los Angeles
MYRON HUNT ..... Los Angeles
WM. H. WHEELER ..... San Diego
JAMES R. MILLER ..... San Francisco
JOHN J. DONOVAN ..... Oakland
EDWARD GLASS ..... San Francisco

PUBLISHED BY THE BOARD

1923

CALIFORNIA STATE PRINTING OFFICE
FRANK J. SMITH, Superintendent
SACRAMENTO, 1923

27467

SEVENTH REPORT

OF THE

CALIFORNIA STATE BOARD OF ARCHITECTURE

To His Excellency,

FRIEND WM. RICHARDSON,

Governor of the State of California:

The California State Board of Architecture herewith submits for your consideration, its seventh report, covering the period from November 1, 1920, to March 31, 1923.

In accordance with the provisions of "An Act to regulate the practice of architecture," the State Board of Architecture shall consist of ten members, five of whom shall reside in the Northern District of California and shall constitute the Northern District Board for the examination of applicants for certificates to practice architecture in this state, and five members of said Board shall be residents of the Southern District of California and shall constitute the Southern District Board for the examination of applicants for certificates to practice architecture in this state.

The Board is at present constituted as follows:

CLARENCE R. WARD, San Francisco ..... *President*
WILLIAM J. DODD, Los Angeles ..... *Vice-President*
SYLVAIN SCHNAITTACHER, San Francisco ..... *Secretary-Treasurer*
A. M. EDELMAN, Los Angeles ..... *Assistant Secretary-Treasurer*
JOHN PARKINSON, Los Angeles.
WILLIAM H. WHEELER, San Diego.
MYRON HUNT, Los Angeles.
JAMES R. MILLER, San Francisco.
JOHN J. DONOVAN, Oakland.
EDWARD GLASS, San Francisco.

The Northern District Board, with offices at 437-438 Phelan Building, San Francisco, is as follows:

CLARENCE R. WARD ..... *President*
SYLVAIN SCHNAITTACHER ..... *Secretary-Treasurer*
JAMES R. MILLER
JOHN J. DONOVAN
EDWARD GLASS

The Southern District Board, with offices at Pacific Finance Building, Los Angeles, is as follows:

WILLIAM J. DODD ..... *President*
A. M. EDELMAN ..... *Secretary-Treasurer*
JOHN PARKINSON
WILLIAM H. WHEELER
MYRON HUNT

Since the submission of the Sixth Report another attempt was made during the 1921 session of the State Legislature to amend the Act Regulating the Practice of Architecture. The proposed amendment increased the maximum fine from $500.00 to $600.00 in order that violators of the Act might be tried in the superior court and amended the wording of section 5 to read after the words "indicated to the public" "that he was or is an architect, certificated or otherwise without having said certificate or to knowingly cause or permit such advertisement, or sign, or card, or other device to be put out or displayed."

As before, the purpose of these amendments was in no wise intended to restrict the legitimate activities of those engaged in the building industry, but was intended to make the Act more effective in protecting the public against unqualified practitioners. The amendments were not reported out of committee.

At the time of writing, it is proposed by Senate Bill No. 442 to establish a Bureau of Professional Standards to take over the work of all State Boards administering laws for professional registration. There can be no valid objection to this measure, providing the proper examining Boards are assured by the provisions of the Act.

The annual meetings of the joint Boards were held as follows: San Francisco, April 15, 1921; Los Angeles, May 11, 1922, and San Francisco, April 10, 1923.

In addition, each Board has held the usual stated meetings. Written examinations have been held each year for the Nortern District Board at the University of California at Berkeley, and for the Southern District Board at the University of Southern California, Los Angeles.

(For number of certificates issued, see financial statements.)

The following modification of the rules of the Board was adopted at the meeting of the joint Boards held at Los Angeles, May 11, 1922.

"Any person delinquent in the payment of annual license fees shall not be granted a renewal of his certificate unless the delinquent fees have been paid, and including the necessary fees in connection with the new application, and provided that the professional conduct of the applicant has not been in question."

All of which is respectfully submitted.

CLARENCE R. WARD,
President.

SYLVAIN SCHNAITTACHER,
Secretary and Treasurer

Dated March 31, 1923.

FINANCIAL STATEMENTS NORTHERN DISTRICT.

From April 1, 1920, to April 1, 1921.

RECEIPTS.

41 application fees at $15.00	$615 00
32 examination fees at $5.00	160 00
3 re-examination fees at $10.00	30 00
470 license fees at $5.00	2,350 00
Southern Board share of traveling expense	120 64
Southern Board share of examination expense	99 96
Petty cash	5 00
Revolving fund	95 00
State account April 1, 1920	1,231 44
	$4,707 04

DISBURSEMENTS.

Administration	$2,288 15
Registration	209 75
Petty cash	5 00
Revolving fund	95 00
State account April 1, 1921	2,109 14
	$4,707 04

From April 1, 1921, to March 31, 1922.

RECEIPTS.

24 application fees at $15.00	$360 00
27 examination fees at $5.00	135 00
6 re examination fees at $10.00	60 00
423 license fees at $5.00	2,115 00
Share of printing sixth report from Southern District Board	95 40
Share of membership fee in National Council of Architectural Registration Boards	12 50
Share of examination expense	12 50
Petty cash	5 00
Revolving fund	95 00
State account March 31, 1921	2,109 14
	$4,999 54

DISBURSEMENTS.

Administration	$2,322 62
Registration	94 00
Petty cash	5 00
Revolving fund	95 00
State account March 31, 1922	2,482 92
	$4,999 54

From April 1, 1922, to March 31, 1923.

RECEIPTS.

462 license fees at $5.00	$2,310 00
34 application fees at $15.00	510 00
1 fee in payment of outside bank charge	05
28 examination fees at $5.00	140 00
5 temporary application fees	25 00
Southern District Board share of examination expense	50 00
Petty cash	5 00
Revolving fund	95 00
State account March 31, 1922	2,482 92
	$5,617 97

DISBURSEMENTS.

Office rent		$750 00
Salary of assistant secretary		1,020 00
Office service and expense—		
Secretary and clerical	$48 15	
Materials and supplies	12 54	
Postage	60 00	
Printing and stationery	56 70	
Traveling expense	213 18	
Telephone and telegraph	66 23	
Examination expense	116 00	
Membership fee, National Council	12 50	
		585 30
Petty cash		5 00
Revolving fund		95 00
State account March 31, 1923		3,162 67
		$5,617 97

FINANCIAL STATEMENTS, SOUTHERN DISTRICT.

April 1, 1920—April 1, 1921.

RECEIPTS.

Applications, Form B	43 at $15.00		$645 00	
Certificates, Form B	32 at 5.00		160 00	
License fees	320 at 5.00		1,600 00	
Examination fees	3 at 10.00		30 00	
Bank interest			23 67	
Delinquent fees payable to Northern District			15 00	
				$2,473 67
Balance in treasury April 1, 1920				1,551 96
				$4,025 63

DISBURSEMENTS.

Office rent			$328 37	
Salary			1,052 50	
Office expense			436 66	
Written examination expense			144 26	
Traveling expense, board members			558 26	
Remittance to state treasurer			776 49	
				$3,296 54
Cash on hand April 1, 1921				729 09
				$4,025 63

April 1, 1921—April 1, 1922.

RECEIPTS.

Applications, Form B		61 at $15.00	$915 00	
Certificates, Form B		52 at 5.00	260 00	
License fees—				
1919	3 at $5.00	$15 00		
1920	6 at 5.00	30 00		
1921	92 at 5.00	460 00		
1922	275 at 5.00	1,375 01		
1923	1 at 5.00	5 00		
			1,885 01	
Written examination fees		2 at $10.00	20 00	
Sale of rug 9 x 12			25 00	
				$3,105 01
Balance in treasury April 1, 1921				729 09
				$3,834 10

DISBURSEMENTS.

Office rent			$588 45	
Salary, assistant secretary			1,020 00	
Office service and expense—				
Secretary and office		$161 33		
Materials and supplies		11 40		
Postage		45 00		
Telephone and telegraph		67 49		
Printing and stationery		176 49		
			461 71	
Traveling expense, board members			661 82	
N. C. A. R. membership fee			25 00	
Legal expense 71st and 72d fiscal years			100 00	
Furniture purchased			224 53	
Examination expense			34 80	
				$3,116 31
Cash on hand April 1, 1922				717 79
				$3,834 10

April 1, 1922—April 1, 1923.

RECEIPTS.

Applications, Form B		60 at $15.00	$900 00	
Certificates, Form B		44 at 5.00	220 00	
License fees—				
1913	1 at $5.00	$5 00		
1914	3 at 5.00	15 00		
1915	1 at 5.00	5 00		
1920	2 at 5.00	10 00		
1921	6 at 5.00	30 00		
1922	94 at 5.00	470 00		
1923	319 at 5.00	1,595 00		
			2,130 00	
Written examination fees		3 at $10.00	30 00	
Sale of 100 yards carpet			165 00	
				$3,445 00
Balance in treasury April 1, 1922				717 79
				$4,162 79

DISBURSEMENTS.

Office rent		$547 20	
Salary, assistant secretary		1,020 00	
Office service and expense—			
Secretary and office	$119 18		
Materials and supplies	7 35		
Postage	35 00		
Telephone and telegraph	68 32		
Printing and stationery	26 90		
		256 75	
Traveling expense, board members		319 00	
N. C. A. R. membership fee		12 50	
Examination expense		182 99	
			$2,338 49
Cash on hand April 1, 1923			1,824 35
			$4,162 79

LIST OF ARCHITECTS
NORTHERN DISTRICT, CALIFORNIA

Corrected to March 31, 1923.

Certificate No.	Name	Address
B 857	Adams, George J.	Citizens' Bank Building, Los Angeles
B 929	Ackerman, Newton	926 10th street, Eureka
B 503	Ahnden, John H.	358 Third avenue, San Francisco
B 409	Allen, Glenn	41 S. Sutter street, Stockton
B 508	Allen, Harris C.	Central Bank Building, Oakland
B1053	Anderson, Arthur W.	Sharon Building, San Francisco
B 449	Applegarth, G. A.	Claus Spreckels Building, San Francisco
B 322	Appleton, A.	Foxcroft Building, San Francisco
B 844	Armitage, Ralph W.	416 Montgomery street, San Francisco
B 962	Armitage, W. H.	1107 Pierce street, San Francisco
B 614	Ashcroft, G. B.	1823 Alameda avenue, Alameda
B 674	Ashley, G. F.	58 Sutter street, San Francisco
B 878	Austin, Elizabeth M.	Hearst Building, San Francisco
A 76	Binder, William	Rea Building, San Jose
A 127	Beasley, William	730 Hearst Building, San Francisco
A 159	Barrett, Charles H.	Hotel Washington, San Francisco
A 54	Bliss, Walter D.	Balboa Building, San Francisco
A 90	Blaisdell, Nathaniel	255 California street, San Francisco
B 282	Bakewell, John, Jr.	251 Kearny street, San Francisco
B 274	Baur, John A.	251 Kearny street, San Francisco
B 437	Buckel, Charles	312 San Jose avenue, San Francisco
B 361	Brown, Arthur, Jr.	251 Kearny street, San Francisco
B 354	Baker, William J.	2255 Ramona street, Oakland
A 53	Barth, Hermann	401 Phelan Building, San Francisco
B 564	Blohme, J. Harry	454 California street, San Francisco
B 586	Bain, A. J.	Arctic Building, Seattle, Wash.
B 612	Bugbee, Arthur S.	Sharon Building, San Francisco
B 450	Boxall, Hugh L.	230 Lick Building, San Francisco
B 673	Breeze, William F.	2522 Green street, San Francisco
B 732	Burgren, Albert W.	Phelan Building, San Francisco
B 794	Baxter, O. Reed	104 High Holborn, London, England
B 809	Butner, Charles E.	Cory Building, Fresno
B 815	Bruce, Morris M.	859 Flood Building, San Francisco
B 817	Bertz, Earle B.	168 Sutter street, San Francisco
B 841	Bissell, Howard G.	21 S. San Joaquin street, Stockton
B 855	Bridgman, Lilian	1715 La Loma avenue, Berkeley
B 854	Branner, John K.	251 Kearny street, San Francisco
B 910	Burnett, Howard G.	684 Hoddon road, Oakland
B 921	Beuttler, John F.	110 Sutter street, San Francisco
B 926	Bangs, E. Geoffrey	First National Bank Building, San Francisco
B 927	Buckley, Vincent	197 Coleridge street, San Francisco
B 928	Bolles, Edward G.	233 Post street, San Francisco
B 948	Beersman, Charles G.	672 Rush street, Chicago, Ill.
B 951	Blaine, Roger W.	442 E. 15th street, Oakland
B 996	Backus, Robert E.	1314 O street, Sacramento
B1019	Byrne, Walter G.	Theater Building, Santa Cruz
B1045	Brigham, George, Jr.	1605 Del Mar avenue, Fresno
B1065	Brown, Guy L.	2627 13th avenue, Oakland
B ----	Bruner, E. L.	Rowell Building, Fresno
B1073	Bouchspies, William F. C.	1701 Larkin street, San Francisco
B1083	Baumann, H. C.	251 Kearny street, San Francisco
B1181	Barton, F. Eugene	1122 Crocker Building, San Francisco
B1168	Barker, Edward T.	2308 26th avenue, Oakland
B1187	Boese, Henry A.	74 New Montgomery street, San Francisco
B 519	Cowles, Louis	495 Mendocino avenue, Santa Rosa
B 634	Cuff, Clarence	Forum Building, Sacramento
B 479	Cahill, B. J. S.	Easton Building, Oakland
B 497	Cornelius, Albert	625 Market street, San Francisco
B 506	Coates, W. D., Jr.	Rowell Building, Fresno
B 403	Crim, W. H., Jr.	425 Kearny street, San Francisco
B 438	Carey, John W.	Merchants National Bank Building, San Francisco
B 471	Coulter, Norman R.	46 Kearny street, San Francisco
A 225	Campbell, Alden W.	3455 J street, Sacramento
B 371	Clark, Arthur B.	Stanford University, California
A 200	Cantin, A. A.	Foxcroft Building, San Francisco
A 161	Coffey, Alfred I.	Humboldt Bank Building, San Francisco
A 253	Corlett, William H.	Napa, California
A 130	Childs, Elmer E.	2123 Bancroft way, Berkeley
A 38	Collischonn, Otto	1108 Regent street, Alameda
A 31	Colley, Charles J.	3166 Washington street, San Francisco
B 547	Cole, Chester	Waterland-Breslauer Building, Chico
B 565	Clausen, Charles O.	Hearst Building, San Francisco
B 650	Corlett, William G.	Oakland Savings Bank Building, Oakland
B 663	Cannon, Edward W.	Central Bank Building, Oakland
B 718	Coxhead, Ernest	Hearst Building, San Francisco
B 726	Cheney, Charles H.	Union Bank Building, Los Angeles
B 769	Christie, John H.	S. P. Building, San Francisco
B 912	Curtis, E. N.	257 S. First street, San Jose
B 998	Colmesnil, de George T.	130 Montgomery street, San Francisco

Certificate No.	Name	Address
B 970	Clowdsley, J. Upton	Elks Building, Stockton
B 982	Cantrell, George M.	1608 Morton street, Alameda
B 995	Cauldwell, Albert M.	251 Kearny street, San Francisco
B1039	Collins, Allen C.	Theater Building, Santa Cruz
B1052	Coombs, Frank E.	1111 Crocker Building, San Francisco
B1098	Clark, Birge M.	Stanford University, California
B1183	Collins, Henry C.	First National Bank Building, San Francisco
B 755	Claudius, Charles W.	Call Building, San Francisco
B1203	Collins, Frederick R.	1032 Hyde street, San Francisco
A 125	Dolliver, J. W.	Monadnock Building, San Francisco
B 351	Dickey, Charles W.	2149 Broadway, Oakland
A 119	Devlin, Charles J. I.	Pacific Building, San Francisco
B 434	Deuel, D. V.	2716 Hillegass avenue, Berkeley
B 445	Davis, F. C.	515 Buena Vista avenue, San Francisco
B 549	Devlin, Leo J.	821 Market street, San Francisco
B 557	Denke, A. R.	230 Dalziell Building, Oakland
B 649	DeLongchamps, Fred J.	Gazette Building, Reno, Nev.
B 753	Dakin, Clarence C.	2931 Pine avenue, Berkeley
B 792	Davis, Hugh Y.	Davis-Heller-Pearce Co., Stockton
B 675	Donovan, John J.	1916 Broadway, Oakland
B 897	Donnellan, James J.	524 S. Spring street, Los Angeles
B 946	Dibelka, James B.	2737-45 W. 22d street, Chicago, Ill.
B1012	Dean, James S.	1351-40th street, Sacramento
B1103	Dean, Charles F.	1351 40th st., Sacramento
B1116	Dean, Marshall A.	105 4th street, Pacific Grove
A 19	Everett, Oliver	1942 Webster street, San Francisco
A 167	Edwards, Thomas M.	833 Market street, San Francisco
A 204	Ehrenpfort, Arthur T.	373 Russ Building, San Francisco
B 596	Ettler, John A.	1346 41st avenue, San Francisco
B 706	Evers, Albert J.	58 Sutter street, San Francisco
B1088	Eames, Edward A.	1539 Webster street, San Francisco
B1082	Edminson, Ross W.	718 18th street, Washington, D. C.
B1167	Eichler, Alfred W.	1826 Garfield Place, Hollywood
B1100	Fraiser, Emory M.	2401 W. 6th street, Los Angeles
A 143	Forsyth, J. W.	Smith Building, New York
B 422	Foulkes, Edward T.	Crocker Building, San Francisco
B 513	Flugger, John C.	Avenida, Jalisco 198, Mexico City
A 180	Farr, Albert	Foxcroft Building, San Francisco
A 101	Freeman, J. Eugene	Kohl Building, San Francisco
A 55	Faville, W. B.	Balboa Building, San Francisco
B1127	Ferree, Harold	57 E. Jackson Boulevard, Chicago
B 579	Falch, Walter C.	Hearst Building, San Francisco
B 601	Fairweather, J. S.	Balboa Building, San Francisco
B 662	Fantoni, Charles	550 Montgomery street San Francisco
B 833	Foale, F. Sandford A.	Oschner Building, Sacramento
B 874	Froberg, Alben	R. R. No. 1, Sausalito
B 938	Franklin, Charles H.	Bank of Italy Building, Fresno
B 932	Field, Ephraim	American Bank Building, Oakland
B 980	Flawn, Stanley C.	Foldronia Building, Reno, Nev.
B1020	Francisco, Ferris LeRoy	511 5th avenue, New York
B1096	Farnkopf, Frank A.	251 Kearny street, San Francisco
B1134	Findlay, Helen E.	Box 291, Marysville
B1201	Frick, Edward L.	251 Kearny street, San Francisco
B 280	Geilfuss, Carl	1056 Fulton street, San Francisco
B 499	Gardner, Lewis M.	942 Pine street, San Francisco
A 88	Garin, Etienne A.	1024 Hearst Building, San Francisco
B 989	Garden, Edward G.	2005 Discount Building, Cleveland, O.
B 756	Glass, Edward	Underwood Building, San Francisco
B 779	Gottschalk, Charles E.	Phelan Building, San Francisco
B 788	Gutterson, Henry H.	278 Post street, San Francisco
B 807	Gould, J. S.	48 Paloma avenue, San Francisco
B 886	Griffin, Fern W.	Electric Building, Grand Junction, Colo.
B 902	Georgeson, Franklin T.	Humboldt National Bank Building, Eureka
B 906	Garren, William I.	Chronicle Building, San Francisco
B 968	Gebhardt, W. H.	3633 West street, Oakland
B 994	Gustafson, Carl A.	1021 Ainslee street, Chicago, Ill.
B1023	Galbraith, Victor	Elks Building, Stockton
A 74	Greene, C. Sumner	Carmel, California
B1161	Gillam, W. F. C.	1228 Paloma avenue, Burlingame
B1156	Gauger, Augustus F.	605 Exchange Building, St. Paul, Minn.
B 486	Harris, H. E.	815 Balboa street, San Francisco
B 489	Herold, P. J.	Merchants Exchange, San Francisco
B 432	Hays, W. C.	First National Bank Building, San Francisco
B 429	Hobart, Lewis P.	Crocker Building, San Francisco
B 448	Hemmings, E. C.	Ochsner Building, Sacramento
B 785	Heide, A. F.	Hotel Hall, Klamath Falls, Oregon
A 307	Holland, Frank S.	1629 Folsom street, San Franciscoo
A 209	Hind, W. G.	3885 Webster street, Oakland
B 400	Hay, Mark	Kewanee, Illinois
A 152	Herold, R. A.	Forum Building, Sacramento
B 304	Howard, George H.	35 Montgomery street, San Francisco
B 301	Howard. John Galen	First National Bank Building, San Francisco
A 47	Haupt, Oscar	321 Grant avenue, San Francisco
B 552	Hatch, John Davis	2631 Hillegass avenue, Berkeley
B 609	Hildebrand, Ernest	Crocker Building, San Francisco
B 546	Headman, August G	Call Building, San Francisco

Certificate No.	Name	Address
B 550	Humphreys, James H.	408 Wells Fargo Building, San Francisco
B 600	Hladik, J. C.	Monadnock Building, San Francisco
B 706	Hotchkin, Robert B.	325 Forthcamp avenue, Fresno
B 754	Hirschfeld, B. S.	1328 Hyde street San Francisco
B 770	Higgins, W. E.	Auzerais Building, San Jose
B 773	Hyman, Samuel Lightner	Foxcroft Building, San Francisco
A 234	Haley, Arthur L.	1311 E. Eighth street, Olympia, Washington
B 881	Holt, Robert L.	332 Glendale avenue, Oakland
B 933	Holden, J. Newton	Oleum
B 949	Hubbert, Wallace H.	Modesto
B 963	Harrison, Frederick S.	Peoples Savings Bank Building, Sacramento
B 979	Herbert, William F.	City Hall, Santa Rosa
B 998	Heiman, Samuel	57 Post street, San Francisco
B1003	Hurt, Edgar B.	521 Cottage street, Oakland
B1046	Hanifin, Arthur C.	3202 San Pablo avenue, Oakland
B1045	Hilburn, G. N.	R.F.D. No. 2, Box 211, Turlock
B1076	Harper, W. W.	1645 Page street, San Francisco
B1104	Houghton, Vernon W.	275 Post street, San Francisco
B1109	Hoover, Ira W.	Planada
B1132	Hass, Andrew T.	2124 Eagle avenue, Alameda
B1131	Hurd, Lester W.	168 Sutter street, San Francisco
B1160	Hanselmann, Herman	37 S. Wabash avenue, Chicago, Illinois
B1184	Howard, Henry Temple	First National Bank Building, San Francisco
B 913	Irvine, Richard R.	Call Building, San Francisco
A 198	Jones, Brainerd	110 Washington street, Petaluma
B 405	Jacobs, Alfred Henry	110 Sutter street, San Francisco
B 424	Joseph, Bernard J.	Call Building, San Francisco
B 597	Johnson, Arthur O.	Rowell Building, Fresno
B 648	Jewett, Grace	57 Post street, San Francisco
B 795	Johnson, C. Raimond	Citizens National Bank Building, Los Angeles
B 901	Jory, Stafford L.	1514 La Loma avenue, Berkeley
B 941	Jensen, Creston H.	Call Building, San Francisco
B 981	Johnson, Albin R.	49 Geary street, San Francisco
B1021	Jacobus, Robert F.	511 Fifth avenue, New York
B1038	Jeans, Raymond W.	1722 San Pedro avenue, Berkeley
B1072	Johnson, Anton	Kingsburg
B1147	Jorgensen, Virgil W.	406 Balboa Building, San Francisco
A 133	Knowles, William A.	Hearst Building, San Francisco
A 196	King, Walter	Call Building, San Francisco
B 336	Kirby, Charles K.	525 Forthcamp avenue, Fresno
B 455	Kelham, George W.	Sharon Building, San Francisco
B 489	Krafft, E. J.	Phelan Building, San Francisco
A 135	Krafft, Julius E.	Phelan Building, San Francisco
B 603	Kuhn, Alfred	958 Pacific Building, San Francisco
B 887	Keys, Harold Harte	1725 San Jose avenue, Oakland
B 834	Koenig, William	1 Pacheco street, San Francisco
B1031	Kurabashi, Toyokichi	511 Battery street, San Francisco
B1099	Klinkhardt, George R.	44 Eucalyptus road, Berkeley
B1193	Kruse, Lawrence A.	251 Kearny street, San Francisco
A 71	Lutgens, A. C.	618 Sacramento street, Vallejo
B 423	Lansburgh, G. A.	140 Montgomery street, San Francisco
A 201	Lenzen, Theodore W.	Humboldt Bank Building, San Francisco
B 447	Lofquist, John O.	1399 Tamalpais avenue, Berkeley
B 566	Lowe, Willis C.	Monadnock Building, San Francisco
B 615	Losekann, Joseph	Elks Building, Stockton
B 321	Long, Walter J.	1517 23d street, Sacramento
B 936	Loubet, A. J.	3704 Harper Court, Oakland
B1005	Lamb, Arthur H.	Hagelstein Building, Sacramento
B1004	Lesswing, Sylvester S.	200 Bush street, San Francisco
B1035	Lewis, Walter O.	Merchants National Bank Building, San Francisco
B1040	Lee, Charles R.	639 Butler Building, San Francisco
B1071	Lake, Harmon Rafael	1319 Taylor street, San Francisco
B 416	McCrea, George E.	369 Pine street, San Francisco
A 224	McNally, Cornelius S.	23 Woodland avenue, San Francisco
A 121	McDougall, B. G.	381 Bush street, San Francisco
A 171	McKenzie, Charles S.	Bank of San Jose Building, San Jose
A 149	McHenry, John	2210 Ellsworth street, Berkeley
A 104	McDougall, C. C.	381 Bush street, San Francisco
A 44	McCall, Charles W.	Central Bank Building, Oakland
B 439	Murdock, Hamilton	Syndicate Building, Oakland
B 478	Milwain, W. E.	Albany block, Oakland
B 490	Merritt, H. P.	American National Bank Building, San Francisco
B 382	Mullgardt, Louis	Chronicle Building, San Francisco
B 404	Mohr, Norman W.	46 Kearny street, San Francisco
B 344	Morgan, Julia	Merchants Exchange, San Francisco
B----	Martin, Edwin D.	5 N. La Salle street, Chicago, Illinois
A 148	Mathews, Edgar A.	Call Building, San Francisco
A 188	Milwain, A. M.	607 37th street, Oakland
A 83	Mooser, William	Nevada Bank Building, San Francisco
A 112	Meyer, Fred H.	Bankers Investment Building, San Francisco
A 89	Meussdorffer, C. A.	Humboldt Bank Building, San Francisco
A 186	Miller, Washington J.	417 Market street, San Francisco
A 85	Mathews, Walter J.	927 Broadway, Oakland
A 203	Mathewson, E.	428 Cory Building, Fresno

Certificate No.	Name	Address
A 137	Miller, James R.	Lick Building, San Francisco
A 57	Meyers, Henry H.	Kohl Building, San Francisco
B 542	Mastropasqua, Louis	Columbus Savings Bank Building, San Francisco
B 675	Minton, Henry A.	244 Kearny street, San Francisco
B 734	Monges, Henry B.	U. S. Mortgage and Trust Co., New York
B 757	Miller, Chester H.	Perry Building, Oakland
B1128	Martin, Eugene K.	Arlington Building, Bakersfield
B 790	Morrow, Irving F.	Chronicle Building, San Francisco
B 808	Morrell, Ralph P.	41 Sutter street, Stockton
B 847	Mitchell, James H.	816 Fairfield road, Burlingame
B 859	Mayo, Frank V.	Yosemite Building, Stockton
B 873	Michelsen, Harry M.	1363 Seventh avenue, San Francisco
A 103	McDougall, George B.	State Engineering Office, Sacramento
B 974	Masten, Charles F.	68 Post street, San Francisco
B 950	Morrison, Milton W.	716 41st avenue, San Francisco
B 993	Merchant, William G.	806 Masonic avenue, San Francisco
B1074	Mack, Lewis Gerstle	2676 Pacific avenue, San Francisco
B1151	Mowbray, Melton V., Jr.	4236 Foothill boulevard, Oakland
B1152	Mooser, William, Jr.	Nevada Bank Building, San Francisco
B1186	Miller, Leffler B.	1154 W. 42d street, Los Angeles
B 433	MacDonald, Kenneth, Jr.	234 Pine street, San Francisco
A 312	Magee, James A.	460 Lyon street, San Francisco
B----	McManus, Edward C.	Alberta Apartments, Long Beach
A 138	Maybeck, Bernard R.	35 Montgomery street, San Francisco
B 393	Newman, William A.	Post Office Building, San Francisco
B 494	Newsom, Sidney B.	Nevada Bank Building, San Francisco
A 184	Nordin, August	Mills Building, San Francisco
B 315	Neubauer, Franz E.	4244 Anza street, San Francisco
B 517	Neumarkel, Emil A.	1566 O'Farrell street, San Francisco
B 580	Narbett, James T.	906 MacDonald avenue, Richmond
B 617	Nicolais, R. A.	First National Bank Building, Fort Worth, Texas
B 702	Norton, Francis, J.	P. O. Box 1233, Los Angeles
B 791	Norberg, Ernest L.	Bankers Investment Building, San Francisco
B 880	Newsom, Noble	Nevada Bank Building, San Francisco
B1001	Norberg, John E.	Balboa Building, San Francisco
B1202	Newsom, Archie T.	Nevada Bank Building, San Francisco
A 228	Olive, LeBaron R.	887 Franklin street, Santa Clara
B 279	O'Brien, Smith	Bankers Investment Building, San Francisco
A 126	O'Brien, Matthew	Foxcroft Building, San Francisco
B 613	Oser, W. L.	Chico
B 716	Osborn, Edward T.	621 Ninth avenue, Seattle, Washington
B 843	Osborne, Erle J.	Balboa Building, San Francisco
B 846	O'Brien, Albert	240 Montgomery street, San Francisco
B 939	Officer, Robert G.	Berkeley Bank Building, Berkeley
B 971	O'Brien, George	1117 53d street, Oakland
B 428	Pinkham, Walter E.	587 Frederick street, San Francisco
B 324	Page, George W.	Box 142, Route A, Santa Clara
A 205	Paff, Charles	150 Nassau street, New York
B 339	Polk, Willis	Hobart Building, San Francisco
A 155	Politeo, M. V.	First National Bank Building, San Francisco
A 41	Porporato, John A.	619 Washington street, San Francisco
B 308	Pattiani, Alfred W.	Empire Farms, Pope Valley
B 441	Parker, Walter H.	234 Pine street, San Francisco
B 719	Priteca, B. Marcus	Pantages Theatre Building, Los Angeles
B 727	Plachek, James W.	2014 Shattuck avenue, Berkeley
B 732	Powers, John H.	460 Montgomery street, San Francisco
B 783	Perry, Warren C.	260 California street, San Francisco
B 871	Petersen, Jens C.	Peoples Savings Bank Building, Sacramento
B 942	Pring, Thomas E.	2736 Forest avenue, Berkeley
B 955	Perry, Charles E., Jr.	P. O. Box 636, Vallejo
B 990	Pflueger, Timothy L.	Lick Building, San Francisco
B1014	Peterson, Edward W.	1527 Van Ness avenue, Fresno
B1182	Poage, Perry Thomas	727 22d street, Sacramento
B 977	Quandt, Fred W.	Humboldt Bank Building, San Franciscoz
B 276	Raiguel, W. O.	Savings and Trust Building, Los Angeles
A 145	Reid, James W.	California-Pacific Building, San Francisco
A 7	Reid, Merritt J.	California-Pacific Building, San Francisco
A 185	Ross, T. Paterson	310 California street, San Francisco
A 114	Rousseau, Charles J.	1482 California street, San Francisco
A 48	Righetti, Perseo	Phelan Building, San Francisco
A 46	Rushforth, George	354 Pine street, San Francisco
B 387	Ratcliff, Walter H.	First National Bank Building, Berkeley
B 457	Roberts, J. L.	1348A Figueroa street, Los Angeles
B 541	Reed, Walter D.	Oakland Savings Bank Building, Oakland
A 293	Russell, C. H.	1106 W. P. Story Bulding, Los Angeles
B 628	Reid, Francis W.	Box 185, Concord
B 624	Richardson, Charles E.	Texas Building, Dallas, Texas
B 664	Reid, John, Jr.	First National Bank Building, San Francisco
B 677	Rogers, Charles E. J.	Phelan Building, San Francisco
B 728	Rankin, Joseph J.	First National Bank Building, San Francisco
B 861	Remmel, B. F.	753 Grand avenue, Oakland
B 930	Rowell, Joseph W.	Claus Spreckels Building, San Francisco
B 925	Ryland, Columbus J.	60 Market street, San Francisco
B 953	Ralph, George E.	769 Pine street, San Francisco
B 483	Ray, Russel	Crocker Building, San Francisco

Certificate No.	Name	Address
B1036	Renfro, M. P.	Porterville, California
B1148	Rist, Martin J.	Santa Fe Building, San Francisco
B1180	Roeth, Charles F. B.	2520 Hillcourt street, Berkeley
B 492	Sexton, Norman W.	Chronicle Building, San Francisco
B 511	Scholz, Arthur G.	Phelan Building, San Francisco
B1118	Sellon, George C.	Mitau Building, Sacramento
A 183	Shea, Frank T.	Chronicle Building, San Francisco
B 357	Schumacher, Edward A.	Call Building, San Francisco
B 370	Sawyer, Houghton	Hearst Building, San Francisco
A 208	Stone, Louis	24 S. California street, Stockton
A 266	Shermund, Henry	Hearst Building, San Francisco
A 279	Soderberg, Fred	First National Bank Building, Oakland
A 226	Smith, Henry C.	785 Market street, San Francisco
B 856	Siebrand, Carl	Northern Life Building, Seattle, Wash.
B 856	Schwerdt, Philip	1104 Fell street, San Francisco
A 39	Shea, Will D.	Chronicle Building, San Francisco
A 289	Salfield, David	250 E. Mariposa avenue, Stockton
B 254	Schardin, Frank H.	911 O street, Sacramento
A 166	Skidmore, Charles H.	Call Building, San Francisco
B 316	Sawyer, Charles H.	Mountain View, California
A 286	Schroepfer, Albert	Nevada Bank Building, San Francisco
A 17	Schnaittacher, Sylvain	233 Post street, San Francisco
A 16	Smith, Alfred W.	1010 Broadway, Oakland
B 521	Sheldon, Martin A.	110 Sutter street, San Francisco
B 540	Smith, Thomas	67 Elgin Park, San Francisco
B 631	Swartz, Frederick L.	Rowell Building, Fresno
B 636	Seely, Edward B.	2615 Etna street, Berkeley
B 652	Schmidt, Herbert A.	251 Kearny street, San Francisco
B1125	Satterlee, Ivan C.	Bank of Italy Building, Stockton
B 683	Steilberg, Walter T.	Flatiron Building, San Francisco
B 688	St. John, Fred E.	R. F. D. Box 9, Fresno
B 715	Symmes, Edwin J.	1700 Pearl street, Alameda
B 717	Spangler, Fay R.	215 Balboa Building, San Francisco
B 760	Stewart, Joseph L.	1214 Claus Spreckels Building, San Francisco
B 789	Stock, Lester H.	1475 Bush street, San Francisco
B 772	Starbuck, Henry F.	2550 Merced street, Fresno
B 824	Simpson, Oberl F.	1417 Benton street, Alameda
B 820	Stringham, Roland I.	260 California street, San Francisco
B 828	Simpson, Horace G.	Call Building, San Francisco
B 836	Soper, Frederick J.	1105 Kerckhoff Building, Los Angeles
B 876	Sala, Peter I.	Commercial and Savings Bank Building, Stockton
B 877	Sanford, Florence H.	33 Canyon road, Berkeley
B 893	Skillings, Warren P.	Garden City Bank Building, San Jose
B 904	Stahlberg, Gustave T.	831 York street, San Francisco
B 903	Strothoff, Charles F.	2276 Fifteenth street, San Francisco
B 909	Starks, Leonard F.	Ochsner Building, Sacramento
B 943	Sisson, Ralph C.	548 Boulevard avenue, Piedmont
B 987	Sharpe, E. M.	58 Fout avenue, San Francisco
B1081	Shaw, Raymond R.	care R. F. Felchlin, Fresno
B1133	Scott, Bernard W. H.	833 Ashbury street, San Francisco
B1135	Schmidts, Carl R.	2230 Grove street, San Francisco
B 828	Swain, Clarkson	Delta Building, Stockton
B 496	Sumner, Charles	57 Post street, San Francisco
B1162	Schroder, Howard	2149 Broadway, Oakland
A 96	Toepke, William H.	942 Market street, San Francisco
A 330	Turton, Luther M.	144 Main street, Napa
B 395	Traphagen, O. G.	244 California street, San Francisco
B 480	Thomas, Henry A.	979 Clinton avenue, Fresno
B 602	Thomas, John Hudson	First National Bank Building, Berkeley
B 701	Traver, Harrison B.	Rowell Building, Fresno
B 759	Thayer, O. R.	110 Sutter street, San Francisco
B 890	Tantau, Clarence A.	251 Kearny street, San Francisco
B 957	Teets, George C.	Sisson, California
B 965	Torossian, Aram	2431 College avenue, Berkeley
B1143	Taylor, Ralph D.	Susanville, California
B1165	Thomsen, Harry A., Jr.	Sharon Building, San Francisco
B 647	Upton, Louis M.	454 Montgomery street, San Francisco
A 12	Vogel, Edward J.	1103 O'Farrell street, San Francisco
A 22	Voorhees, Fred D.	Central Bank Building, Oakland
B 956	Vogel, Joshua H.	516 Pacific Building, Seattle, Wash.
B 317	Ward, Clarence R.	454 California street, San Francisco
A 140	Weaver, Morve L.	Box 172, Visalia
B 340	Weeks, Charles Peter	California Insurance Building, San Francisco
B 326	Werner, Carl	Santa Fe Building, San Francisco
B 397	Withers, Creighton	Port Hope, Canada
B 297	Wythe, Willson J.	Central Bank Building, Oakland
A 93	Weeks, William H.	369 Pine street, San Francisco
A 172	Wolfe, Frank D.	Auzerais Building, San Jose
A 181	White, John	35 Montgomery street, San Francisco
B 548	Wright, William J.	Bank of Italy Building, Stockton
B 558	Worswick, A. Lacy	700 Octavia street, San Francisco
B 646	Wood, Harry	Castle and Cook Building, Honolulu
B 666	Widdowson, Arthur H.	1116 Dolores way, Sacramento
B 700	Wilde, William T.	Nevada Bank Building, San Francisco
B 710	Woollett, John W.	Hagelstein Building, Sacramento

Certificate No.	Name	Address
B 819	Wyckoff, Ralph	Growers Bank Building, San Jose
B 845	Williams, Morton A.	5824 Ocean View drive, Oakland
B 860	Wilkinson, William J.	1017 First Savings Bank Building, Oakland
B 875	Wagner, George	251 Kearny street, San Francisco
B 891	White, Hugh C.	Growers Bank Building, San Jose
B 892	Westervelt, J. C.	36 W. 34th street, New York
B 979	Weihe, Ernest E.	251 Kearny street, San Francisco
B 992	Willard, Stanton D.	715 First avenue, San Mateo
B1007	Wood, Norton E.	Fort Winfield Scott, San Francisco
B1085	Wormser, Dorothy	55 Fifth avenue, San Francisco
B1089	Wastell, Ralph E.	1360 Broadway, Oakland
B1126	Wurster, William W.	25 W. Vine street, Stockton
B1190	Ward, Joseph F.	Foxcroft Building, San Francisco
B 366	Young, Edward E.	251 Kearny street, San Francisco
B 907	Yelland, William Raymond	411 Thirteenth street, Oakland
B 313	Zimmer, Samuel B.	1253 W. 37th place, Los Angeles
B 514	Zanolini, Italo	604 Montgomery street, San Francisco

LIST OF ARCHITECTS
SOUTHERN DISTRICT, CALIFORNIA

Certificate No.	Name	Corrected to March. 31, 1923. Address
B ...	Ache, William W.	1616 Fourth avenue, Los Angeles
B 573	Acker, Arthur L.	442 Douglas Building, Los Angeles
B 889	Alderson, Ray	1131 Eleventh street, San Diego
B 659	Allen, Frank P., Jr.	713 First National Bank Building, San Diego
B 621	Allison, D. C.	1405 Hibernian Building, Los Angeles
B 620	Allison, J. E.	1405 Hibernian Building, Los Angeles
B 157	Alpaugh, N. W.	1106-7 Story Building, Los Angeles
B 851	Anderson, H. A.	30 Pine avenue, Long Beach
B 551	Angel, Arthur W.	325 H. W. Hellman Building, Los Angeles
B 590	Ashley, F. M.	1116-25 Detweiler Building, Los Angeles
A 63	Austin, John C.	1116-25 Detweiler Building, Los Angeles
B ...	Austin, Wm. H.	220 First National Bank Building, Long Beach
B 569	Backus, J. J.	Room 35, City Hall, Los Angeles
A 102	Bagley, J. W.	1213 Park avenue, Alameda
B1029	Ballard, Wm. J.	245 E. First street, Long Beach
B 699	Banfield, H. M.	514 Bryson Building, Los Angeles
B 724	Banning, Edwin T.	Bancroft Building, San Diego
B1027	Barber, William	1123 Story Building, Los Angeles
B 991	Barker, M. L.	1174 N. Kenmore avenue, Los Angeles
B1063	Batty, Ernest C.	543 Pacific Electric Building, Los Angeles
B 654	Bean, Henry E.	1123 Central Building, Los Angeles
B1188	Beattie, Ralph O.	555 N. Western avenue, Los Angeles
B 801	Bennett, Cyril	313 Kendall Building, Pasadena
A 214	Benton, Arthur B.	1548 Sunset boulevard, Los Angeles
B 390	Bergstrom, Edwin	1129 Citizens National Bank Building, Los Angeles
B 644	Biggar, Charles H.	405-6 First National Bank Building, Bakersfield
B1172	Birds, Samuel B.	305 Citizens National Bank Building, Los Angeles
B1102	Binderheim, J. W. F.	1119-25 Detweiler Building, Los Angeles
B1107	Bischoff, Alphonse	678 E. 37th street, Los Angeles
A 62	Bixby, B. B.	414 Union Bank Building, Los Angeles
B 576	Blee, John F.	500 Stimson Building, Los Angeles
A 257	Blick, Joseph J.	314 Dodworth Building, Pasadena
A 123	Bliesner, William J.	Anaheim Landing, Seal Beach
B1016	Bloser, Benjamin J.	523 Consolidated Realty Building, Los Angeles
B1050	Boller, Carl H.	531 Douglas Building, Los Angeles
B1033	Bordeaux, William	913-15 Int. Building, Los Angeles
B 743	Borgmeyer, Edw. J.	1003 California Building, Los Angeles
B ...	Boughton, William H.	P. O. Box 343, Santa Monica
B1034	Bowen, William F.	813 Union League Building, Los Angeles
A 45	Bradshaw, C. B.	224 N. Glassell street, Orange
B 975	Brett, Edward C. N.	1827 Fremont avenue, South Pasadena
B ...	Brewster, Floyd E.	Box 75, Mission Canyon, Santa Barbara
B 696	Brockway, Leon C.	402 Chamber of Commerce Building, Pasadena
B ...	Bugenhagen, Geo. H.	Weinrebe Building, Minot, N. D.
B 905	Bullock, Wm. D.	235 San Fernando Building, Los Angeles
B 473	Burns, S. R.	701 Laughlin Building, Los Angeles
B1166	Barnett, Leo W.	726 H. W. Hellman Building, Los Angeles
B1197	Brandner, Alexander R.	825 Kings road, Los Angeles
B ...	Beelman, Claud W.	408 Union Bank Building, Los Angeles
B1136	Birnbach, George	726 H. W. Hellman Building, Los Angeles
B1159	Brelin, Hilding G.	906 Washington Building, Los Angeles
B 978	Cassiday, Robert M.	701 Laughlin Building, Los Angeles
B ...	Chambers, Harold C.	1107 Hibernian Building, Los Angeles
B1111	Charlton, Harry W.	332 San Fernando Building, Los Angeles
B1024	Cheney, Clyde J.	716-19 Fay Building, Los Angeles
B ...	Clark, Carroll	305 S. Central avenue, Glendale
B 661	Clark, Orville L.	401 Brower Building, Bakersfield
B ...	Clarke, Wm. M.	4072 W. Seventh street, Los Angeles
B ...	Clements, Stiles O.	1124 Van Nuys Building, Los Angeles
B 714	Cline, Edgar H.	446 Douglas Building, Los Angeles
B ...	Coate, Roland E.	607 Union Bank Building, Los Angeles
B 870	Cody, Harold Bryant	632 Metropolitan Building, Los Angeles
B 778	Cooper, John M.	318-21 Marsh-Strong Building, Los Angeles
B 458	Corbett, B. Cooper	704 Grant Building, San Francisco
B 556	Corwin, H. G.	398 W. Sixth street, Los Angeles
A 40	Costerisan, George F.	1410 Edgecliffe drive, Los Angeles
B ...	Crawford, Louis N.	8 Jones Building, Santa Maria
B 691	Cressey, Charles	130 S. Brand boulevard, Glendale
B ...	Cross, Harold E.	1132 Merchants National Bank Building, Los Angeles
B ...	Curtis, Robert R.	1435 Grove street, San Diego
B ...	Cooke, Leonard A.	34 Howard-Canfield Building, Santa Barbara
B 447	Curlett, Aleck E.	408 Union Bank Building, Los Angeles
B1141	Davies, Hugh R.	514 Marine Bank Building, Long Beach
B 574	Davis, Pierpont	3215 W. Sixth street, Los Angeles
B ...	Davis, Walter S.	3215 W. Sixth street, Los Angeles
B1018	De Bonne, Francois	731 Pacific Electric Building, Los Angeles
B 704	Deckbar, Harry C.	1007 Wright-Callender Building, Los Angeles

Certificate No.	Name	Address
B 934	Decker, Clarence E.	3550 First street, San D ego
A 260	Dennis, Oliver P.	Room 322, 6372 Hollywood boulevard, Los Angeles
B1075	DeWitt, Robert	4609 W. Eighteenth place, Los Angeles
B 766	Dodd, William J.	905 Brack Shops Building, Los Angeles
A 87	Dorn, Fred R.	525 Marsh-Strong Building, Los Angeles
A 227	Driscoll, Charles F.	465 Oakland avenue, Pasadena
B ---	Dunderdale, George	General Delivery, Santa Monica
B1062	Durfee, M. Eugene	Anaheim
B1169	Durr, William F.	128 W. Sixth street, San Pedro
A 91	Eager, A. W.	P. O. Box 113, Venice
B 623	Eager, Frank O.	American National Bank Building, Monrovia
B1122	Eager, Wesley W.	1211 Pacific Mutual Building, Los Angeles
B 537	Eckart, Hugo	P. O. Box 499, San Gabriel
A 29	Edelman, A. M.	726 H. W. Hellman Building, Los Angeles
B ---	Edwards, William A.	1231 State street, Santa Barbara
B 498	Eisen, Percy A.	325 Pacific Finance Building, Los Angeles
A 265	Eisen, T. A.	256 Wilcox Building, Los Angeles
A 238	Elder, Charles A.	5924 Pasadena avenue, Los Angeles
B ---	Eldredge, George W.	703 Sun Building, Los Angeles
B 658	Eley, Frederick H.	P. O. Box 531, Santa Ana
B 800	Elwing, Birger A.	Harlingen, Texas
B 538	Erkes, Walter E.	538 Bradbury Building, Los Angeles
B ---	Estep, Joe M.	1201 Van Nuys Building, Los Angeles
B ---	Falkenrath, Rudolph, Jr.	419 Detweiler Building, Los Angeles
B 341	Farquhar, Robert D.	427 Security Building, Los Angeles
B 867	Farrar, Frank R.	2027 Santa Monica boulevard, Santa Monica
B 762	Farrell, Richard C.	700 Western Mutual Life Building, Los Angeles
A 261	Farwell, Lyman	2908 S. Figueroa street, Los Angeles
B 309	Fitzhugh, Thornton	916 Story Building, Los Angeles
B ---	Fleming, John G.	1003 Orange Grove avenue, Glendale
B 669	Frauenfelder, J. J.	1116-7 Story Building, Los Angeles
B 685	Freese Ernest Irving	701 Laughlin Building Los Angeles
B 510	Frohman, P. H.	24 Mt. Vernon avenue, Boston, Mass.
B1043	Gable, Geo. E.	634 S. Western avenue, Los Angeles
B ---	Gage, William J.	1038 N. Western avenue, Los Angeles
B 775	Garstang, Chas. E.	903 Los Angeles Trust and Savings Building, Los Angeles
B1117	Gates, Ernest H.	225 E. Twelfth street, Long Beach
B ---	Gerity, H. Scott	2656 Dalton avenue, Los Angeles
A 62	Gill, Irving J.	1406 Alvarado terrace, Los Angeles
B ---	Gill, Louis J.	312 Owl Drug Building, San Diego
B 984	Gilman, Herbert L.	753 Kerckhoff Building, Los Angeles
B 468	Glidden, Homer W.	2633 Artesian street, Los Angeles
A 73	Greene, Henry M.	216-7 Boston Building, Pasadena
A 118	Griffith, Thomas R.	3957 Halldale avenue, Los Angeles
B 678	Gunning, David	2639 24th avenue, Los Angeles
B 346	Grey, Elmer	507 Wright-Callender Building, Los Angeles
B ---	Hale, Perley	572 Spreckels Building, San Diego
B 605	Halley, Robert, Jr.	3575 First street, San Diego
B 608	Hanssen, G. A.	2030 29th street, San Diego
B1124	Hansen, Viggo A.	949 S. Lake street, Los Angeles
B 737	Hartman, Paul F.	1221 Colton street, Los Angeles
B ---	Haskell, Fitch H.	Citizens Savings Building, Pasadena
B ---	Hastings, T. Mitchell	1206 State street, Santa Barbara
A 9	Hebbard, Will Sterling	664-5 I. W. Hellman Building, Los Angeles
B 633	Heineman, Arthur S.	830 San Fernando Building, Los Angeles
B ---	Heinlein, Frederick	P. O. Box 691, Oakland
B ---	Hewitt, Harwood	1130 Van Nuys Building, Los Angeles
B 539	Higgs, P. F.	623 Santa Monica boulevard Santa Monica
B 376	Hillman, J. Constantine	Richardson Building, Pasadena
B ---	Hoag, C. Tracy	129 N. Hancock street, Los Angeles
B 707	Hobbs, Raymond M.	Room 313, 65 N. Raymond avenue, Pasadena
B 641	Hodson, Garvin	19 S. Fair Oaks avenue, Pasadena
B1055	Hoffman, Emil J. T.	114 Fifth avenue, Brooklyn, N. Y
B 681	Hoffmann, Eugene M.	436 Spreckels Building, San Diego
B ---	Hollwedel, H. C.	1819 S. Manhattan place, Los Angeles
B1105	Holmes, David H.	570 Highland avenue, Boulder, Colo.
B 959	Hoose, James H.	6-7 Ramont Building, Modesto
B ---	Hopkins, C. Harold	Box 518, Woodland
B 774	Hopkins, Eugene L.	2210 Romeo street, Los Angeles
B1149	Hopkins, J. Edwin	41 Park Row, New York City
B 918	Horton, B. G.	750 E. Colorado street, Pasadena
B 568	Houghton, Luke	143 Rose street, Los Angeles
B 342	Howard, Geo. A., Jr.	819 Story Building, Los Angeles
B 868	Howard, Herbert C.	619 Broadway Central Building, Los Angeles
B 672	Hibbard, Lester H.	622 Metropolitan Building, Los Angeles
A 68	Hubbell, Chas. E. W.	310 Wilcox Building, Los Angeles
B 944	Hubby, R. Germain	6412 Hollywood boulevard, Los Angeles
A 79	Hudson, Frank D.	443-5 Douglas Building, Los Angeles
B ---	Hudson, W. Asa	1105 Sixth street, Santa Monica
B 338	Hunt, Myron	1107 Hibernian Building, Los Angeles
A 8	Hunt, Sumner P.	701 Laughlin Building, Los Angeles
B 883	Hutchason, Arthur R.	1301-2 Van Nuys Building, Los Angeles
B 811	Hutchison, Chas. M.	427 Security Building, Los Angeles
B1009	Jackson, Herbert L.	614 B street, San Diego
B ---	Jamieson, James P.	1116-26 Arcade Building, St. Louis, Mo.
B 952	Jay, Clarence Lee	301 Braley Building, Pasadena
B 545	Jeffery, Elmore R.	1104 Kerckhoff Building, Los Angeles

Certificate No.	Name	Address
B 585	Johnson, H. Depue	1800 Industrial street, Los Angeles
B ---	Johnson, Harold S.	401 Los Angeles Railway Building, Los Angeles
B 682	Johnson, Reginald D.	607 Union Bank Building, Los Angeles
B 748	Johnson, Wm. Templeton	503 Electric Building, San Diego
B 686	Jones, Howard E.	404 Katz Building, San Bernardino
B ---	Jones, Leonard L.	603 Grosse Building, Los Angeles
B 894	Kahrs, Geo. W.	38 Locust avenue, Long Beach
B 945	Kaufmann, Gordon B.	607 Union Bank Building, Los Angeles
B ---	Keim, T. Beverley, Jr.	709 Haas Building, Los Angeles
B1137	Kelch, Norman W.	420 Title Insurance Building, Los Angeles
B 436	Kelly, Arthur R.	1201 Van Nuys Building, Los Angeles
B 916	Kennedy, Frederick H., Jr.	431 Chamber of Commerce Building, Pasadena
B 365	Kent, Edw. C.	R. F. D. No. 1, Box 38-C, Covina
B1068	Kerton, H. A.	622 Metropolitan Building, Los Angeles
B1092	Kieffer, Raymond J.	218 Wilshire Building, Los Angeles
B 698	King, Richard D.	517 Van Nuys Building, Los Angeles
B 635	Kistner, Theo. C.	Central Mortgage Building, San Diego
B 816	Kleinpell, Wm. E.	618 Aldama terrace, Los Angeles
B1175	Knapp, Isaac Jay	3801 Wisconsin street, Los Angeles
B1163	Kibbey, John R.	826 Loew's State Building, Los Angeles
B1070	Knauer, Henry J.	1129-30 Story Building, Los Angeles
B ---	Kooken, Arthur J.	449 Centennial street, Los Angeles
B 720	Kraemer, Wm. H.	325 N. Western avenue, Los Angeles
A 318	Krause, J. W.	3035 Royal street, Los Angeles
A 10	Krempel, John P.	538 Bradbury Building, Los Angeles
A 294	Kroonen, Leo.	524 W. Seventh street, Corona
B 655	Krucker, Frank G.	500 Ferguson Building, Los Angeles
B ---	Kucera, Joseph J.	1040 Worcester avenue, Pasadena
B ---	Kump, Ernest J.	207-S Rowell Building, Fresno
B 680	Kunst, John E.	820 Higgins Building, Los Angeles
B 684	Kyson, Chas. H.	6034 Hollywood boulevard, Los Angeles
B1028	Larralde, John A.	1018 Story Building, Los Angeles
B1155	Lawson, Marshall R.	216 W. Sixth street, Long Beach
B1091	Lee, William Douglas	610 Grosse Building, Los Angeles
B1106	Leicht, Adolph F.	452 N. Vermont avenue, Los Angeles
B ---	Lindsey, Geo. M.	327-31 Laughlin Building, Los Angeles
B 752	Linthwaite, Herbert A.	621 Witmer street, Los Angeles
B 973	Lockard, E. Keith	38 San Marcos Building, Santa Barbara
B 407	Long, Uriah O.	5419 Marmion way, Los Angeles
B 435	Lourdon, Francis X.	967 El Molino street, Los Angeles
B1145	Loveless, Ilton E.	4027 Kansas street, San Diego
B 914	Low, George	1500 W. Ninth street, Los Angeles
B 721	Lyman, John B., Jr.	79 N. Stone avenue, Tucson, Ariz.
B 765	MacMullen, Jas. D.	care Adjutant General, U. S. A., Washington, D. C.
B1115	Malcom, Daniel Graeme	4019 Normal street, San Diego
A 78	Marsh, Norman F.	211 Broadway Central Building, Los Angeles
B 761	Marston, Mott M.	1400 Stock Exchange Building, Los Angeles
B 484	Marston, Sylvanus B.	25 S. Euclid avenue, Pasadena
B ---	Major, William P.	638 N. Western avenue, Los Angeles
B 530	Martin, Albert C.	430-32 Higgins Building, Los Angeles
B 582	Martin, Harold H.	301-2 Slavin Building, Pasadena
B 452	Mayberry, E. L.	472 Pacific Electric Building, Los Angeles
B ---	Maybury, Edgar W.	25 S. Euclid avenue, Pasadena
B ---	McAfee, Harry	405 Hibernian Building, Los Angeles
B1032	McCulloh, A. H.	111 W. Fourth street, Los Angeles
B ---	McVey, John I.	1800 Third street, San Diego
B 740	Mead, Frank	Ojai, California
B ---	Meier, Rudolph	836 H. W. Hellman Building, Los Angeles
B1185	Mellema, William	1442 Scott avenue, Los Angeles
B 553	Memmler, Arthur H.	Box 1091, Sacramento
B1061	Merrill, Everett H.	3981 W. Sixth street, Los Angeles
B ---	Miller, Harry T.	700 Western Mutual Life Building, Los Angeles
B1137	Mitcham, DeWitt	456 E street, San Bernardino
B 895	Mitchell, Roy C.	540 N. Gower street, Los Angeles
A 319	Mohr, Wm. H.	753 Kerckhoff Building, Los Angeles
B1011	Monaco, Armand R.	913-15 Bank of Italy Int'l Building, Los Angeles
B 575	Montgomery, Mott C.	315 Wright-Callender Building, Los Angeles
B 764	Montgomery, Ross G.	622 Story Building, Los Angeles
B 593	Morgan, O. W.	1124 Van Nuys Building, Los Angeles
B 472	Morris, B. M.	701 Laughlin Building, Los Angeles
B1150	Morrison, James W.	702 E. Orange Grove avenue, Glendale
B1110	Mueller, Floyd	1121 S. Western avenue, Los Angeles
A 92	Munsell, W. A. O.	444-5 Douglas Building, Los Angeles
B ---	Munson, Arthur C.	1103 Story Building, Los Angeles
B ---	Murphy, John Frederic	1206 State street, Santa Barbara
B1158	M'Alister, Glenn C.	605 S. Western avenue, Los Angeles
B ---	Murray, Robt. D., 2d	330 N. Ellis avenue, Eagle Rock City
B 735	Needham, Paul A.	503 Grosse Building, Los Angeles
B ---	Neff, Edwin W.	Slavin Building, Pasadena
B 533	Neher, Otto H.	209 Marsh-Strong Building, Los Angeles
B 976	Nibecker, Alfred S., Jr.	422 Washington Building, Los Angeles
B 763	Noble, G. Curtis	473 Pacific Electric Building, Los Angeles
B 960	Norrenberg, Clarence F.	401 Los Angeles Railway Building, Los Angeles
B1146	Nordland, Kemper	325-B W. Maple avenue, Glendale

Certificate No.	Name	Address
B 799	Norberg, Chas. E.	704 Union Bank Building, Los Angeles
B 924	Norberg, Elwin P.	704 Union Bank Building, Los Angeles
B 323	Norton, S. Tilden	326-30 Pacific Finance Building, Los Angeles
A 268	Noyes, F. A., Jr.	1022 California Building, Los Angeles
B 509	Orr, Robert H.	1300 Corporation Building, Los Angeles
B 853	Odd, Chas. G.	10 W. Henriksgatan, Helsingfors, Finland
A 291	Palmer, Fred E.	320 S. Madison avenue, Pasadena
B 589	Pape, Paul C.	1133 Central Building, Los Angeles
B 453	Parker, L. A.	731 Pacific Electric Building, Los Angeles
B ---	Parkinson, Donald B.	420 Title Insurance Building, Los Angeles
A 11	Parkinson, John	420 Title Insurance Building, Los Angeles
B 372	Patterson, H. M.	324-5 O. T. Johnson Building, Los Angeles
B 787	Peddle, James	226-A George street, Sydney, Australia
B 520	Pennell, W. C.	414 Pacific Finance Building, Los Angeles
B ---	Pettit, Theodore H.	1008 Wright-Callender Building, Los Angeles
B ---	Phillips, Clark	206 Commercial Building, Long Beach
B1164	Phillips, Walter B.	306-7 Ferguson Building, Los Angeles
B 771	Pierce, Harry L.	301 Wright-Callender Building, Los Angeles
A 290	Pillar, S. L.	P. O. Box 327 Claremont, California
B 954	Piper, Natt Alanson	38 Locust avenue, Long Beach
B 947	Plummer, Chas. F.	1108 Story Building, Los Angeles
B1054	Postle, David E.	631 Van Nuys Building, Los Angeles
B1067	Postle, George R.	631 Van Nuys Building, Los Angeles
B ---	Power, T. Franklin	308 Tajo Building, Los Angeles
A 97	Preston, Thos. E.	1604 San Pablo avenue, Fresno
B1015	Priest, Alfred F.	716 Fay Building, Los Angeles
B 493	Quayle, Chas.	601 Spreckels Building, San Diego
B 440	Quayle, Edw.	601 Spreckels Building, San Diego
B 671	Quintin, Scott	219 W. Main street, Alhambra, California
B 804	Rally, Lloyd	1019 Wright-Callender Building, Los Angeles
B1041	Raymond, Robert S.	201 Security Bank Building, San Diego
B 749	Rea, Alfred W.	903-5 Trust and Savings Building, Los Angeles
B 653	Reif, Anton	5134 Sunset boulevard, Los Angeles
B ---	Requa, Richard S.	614 B street, San Diego
B1058	Reuter, Herman A.	45 N. Euclid avenue, Pasadena
B 997	Richards, William	905 Brack Shops Building, Los Angeles
B1048	Risley, Winchton L.	422 Washington Building, Los Angeles
B 375	Rittenhouse, Chas. C.	449 Wilcox Building, Los Angeles
B 377	Roberts, John W.	3407 W. Washington street, Los Angeles
A 2	Roehrig, Frederick L.	35 S. Raymond avenue, Pasadena
B ---	Rogers, H. Lincoln	Spreckels Building, San Diego
B 362	Rosenheim, Alfred F.	402 Pacific Mutual Building, Los Angeles
B 466	Rosenthal, A. B.	709-11 Junior Orpheum Building, Los Angeles
B1173	Roth, John J.	Atascadero
B1042	Ruoff, Allen K.	1103 Story Building, Los Angeles
B 958	Rust, Edw. B.	527 Black Building, Los Angeles
B ---	Rutherford, Francis D.	1316 W. 11th street, Santa Monica
A 289	Saffell, J. M.	924 19th street, Bakersfield
B 412	Saunders, W. J.	227 Laughlin Building, Los Angeles
B 812	Schabarum, Peter K.	716-19 Fay Building, Los Angeles
B 505	Schaefer, Frank R.	1104-6 Kerckhoff Building, Los Angeles
B1059	Schultze, Leonard	17 E. 49th street, New York City
B 888	Sedgwick, A. E.	506 Garland Building, Los Angeles
A 302	Seehorn, I. H.	328 Clay street, Los Angeles
B1113	Sharpe, H. Percy	407 Lankershim Building, Los Angeles
A 292	Shattuck, Chas. E.	318 Mason Building, Los Angeles
B ---	Sherwood, Lionel C.	4303 Hermosa way, San Diego
B ---	Simms, James C.	1509 Magnolia street, Los Angeles
B 592	Sindorf, J.	2008 Pinehurst road, Los Angeles
A 116	Skilling, Chauncey F.	430-31 Bradbury Building, Los Angeles
B 852	Smith, Edw. J.	325 H. W. Hellman Building, Los Angeles
B1154	Smith, Ervin T.	431 S. Alamansor street, Alhambra
B ---	Smith, Geo. Washington	17 Mesa road, Santa Barbara
B 451	Smith, John C.	325 H. W. Hellman Building, Los Angeles
B1101	Smith, Loy Lester	804 Higgins Building, Los Angeles
B1174	Smith, W. Wellington	245 E. Twelfth street, Long Beach
B 739	Snell, Frank S.	2336 Loma Vista Place Los Angeles
B1060	Snyder, Robert W.	502 Electric Building, San Diego
B1037	Somers, Elbert S.	1427 Burton way, Beverly Hills
B 697	Soule, Winsor	1206 State street, Santa Barbara
B ---	Spaulding, Sumner M.	1017 Hibernian Building, Los Angeles
B ---	Spearl, George W.	1116-26 Arcade Building, St. Louis, Mo.
B ---	Spielman, Harold Geiger	1746 Stanley avenue, Los Angeles
B 900	Spink, Chas. R.	5878 Hollywood boulevard, Los Angeles
B1142	Spurgeon, Robert H.	517 Grosse Building, Los Angeles
B 983	Squires, Lester T.	410 Washington Building, Los Angeles
B ---	Staunton, William Field	1017 Hibernian Building, Los Angeles
A 177	Stewart, W. B., Jr.	P. O. Box 462, Long Beach
B 536	Stiff, Frank L.	1251 Fourth avenue, Los Angeles
B1112	Sturges, A. Burnside	4317 W. Second street, Los Angeles
B1120	Swasey, McNeal	405 Hibernian Building, Los Angeles
B 863	Swearingen, Ralph E.	204 Dool Building, Calexico
B ---	Stanton, Jesse E.	1129 Citizens National Bank Building, Los Angeles
B 656	Taylor, Edward C.	804 Merritt Building, Los Angeles
B ---	Taylor, Edward L.	1658 Third avenue, Los Angeles

Certificate No.	Name	Address
A 518	Thompson, Wm. F.	971 Westmoreland avenue, Los Angeles
B 776	Thoresen, Thorgils	4231 Lake Park avenue, Chicago, Ill.
B 694	Thorne, Edwin C.	620 Western Mutual Life Building, Los Angeles
B ...	Thornton, Harry N.	Hill Building, Santa Ana
A 111	Train, Robert F.	227 Western Mutual Life Building, Los Angeles
B ...	Truesdell, C. A., Jr.	302-7 San Fernando Building, Los Angeles
A 285	Tyler, Frank M.	Room 12, 634 S. Western avenue, Los Angeles
B1049	Vaughn, Harry K.	1134 Van Nuys Building, Los Angeles
B1079	van den Hoven, Ewout	312 Central Building, Pasadena 607 Ferguson Building, Los Angeles
B 695	Van Pelt, Garrett	25 S. Euclid avenue, Pasadena
B 54	Van Trees, Paul J.	1106 Kerckhoff Building, Los Angeles
B 595	Vawter, John T.	1124 Van Nuys Building, Los Angeles
A 60	Voelkel, George E.	753 E. 33d street, Los Angeles
A 246	Wackerbarth, August	956 Court Circle, Los Angeles
A 288	Waldmann, Louis C.	994 Pine street, Riverside
B 504	Walker, Albert R.	326-30 Pacific Finance Building, Los Angeles
B1123	Walker, Frederick W.	1129 Citizens National Bank Building, Los Angeles
B ...	Walker, J. Flood care E. E. Noon, Atty.,	Merchants Nat. Bank Building, Los Angeles
B 692	Wallingford, Vere O.	310 Heard Building, Phoenix, Ariz.
B 744	Wallis, Frederick H.	326-30 Pacific Finance Building, Los Angeles
B 563	Warn, Montrose	3125 Winter street, Los Angeles
B 607	Warner, Opie M.	220 Stimson Building, Los Angeles
B1022	Watson, Loyall F.	415 Bank of Italy Building, Los Angeles
B 544	Webber, Walter	1017 Hibernian Building, Los Angeles
B ...	Wells, Don W.	El Centro, California
B 679	Werner, Wm. H. A.	1839 W. 25th street, Los Angeles
B 839	Westlake, Chas. S.	1458 Oak street, Glendale
B1139	Weston, Joseph	515 Hollywood Security Building, Los Angeles
B 421	Wheeler, Wm. H.	Spreckels Building, San Diego
B1093	Whiteley, Harry H.	5912 Hollywood boulevard, Los Angeles
B 591	Wight, Albert O.	Blythe, California
B ...	Wilkinson, Donald R.	6456 Roble avenue, Los Angeles
B1189	Williams, Arthur J.	201 Ong Building, South Pasadena
B1086	Williams, Paul R.	1121 Detweiler Building, Los Angeles
A 110	Williams, Robert E.	227 Western Mutual Life Building, Los Angeles
B 923	Wilson, Chas. Lewis	215 Story Building, Los Angeles
B ...	Winslow, Carleton M.	1134 Van Nuys Building, Los Angeles
B 570	Withey, Henry F.	405 S. Western avenue, Los Angeles
B 967	Witmer, David J.	415 Bank of Italy Building, Los Angeles
A 237	Wolfe, C. E.	P. O. Box 1156, Los Angeles
B 402	Woodruff, S. H.	269-71 N. Larchmont boulevard, Los Angeles
B 418	Woollett, William Lee	1211 Pacific Mutual Building, Los Angeles
B 583	Wright, Parker O., Jr.	1133 Central Building, Los Angeles
B1057	Wyant, C. Stanley	634 S. Western avenue, Los Angeles
A 264	Wyman, Geo. H.	1651 Essex street, Los Angeles
B 560	Zeller, J. T.	215 Currier Building, Los Angeles
B1051	Zimmerman, A. C.	836 H. W. Hellman Building, Los Angeles

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PART IV

REPORT

OF THE

Division of Architecture

A SUBDIVISION OF THE

Department of Public Works

OF THE

STATE OF CALIFORNIA

To Accompany the Second Biennial Report
of that Department

NOVEMBER 1, 1924

GEO. B. McDOUGALL, Chief of Division

CALIFORNIA STATE PRINTING OFFICE
JOHN E. KING, State Printer
SACRAMENTO, 1924

Cottage for Girls, Sonoma State Home, Eldridge, California.

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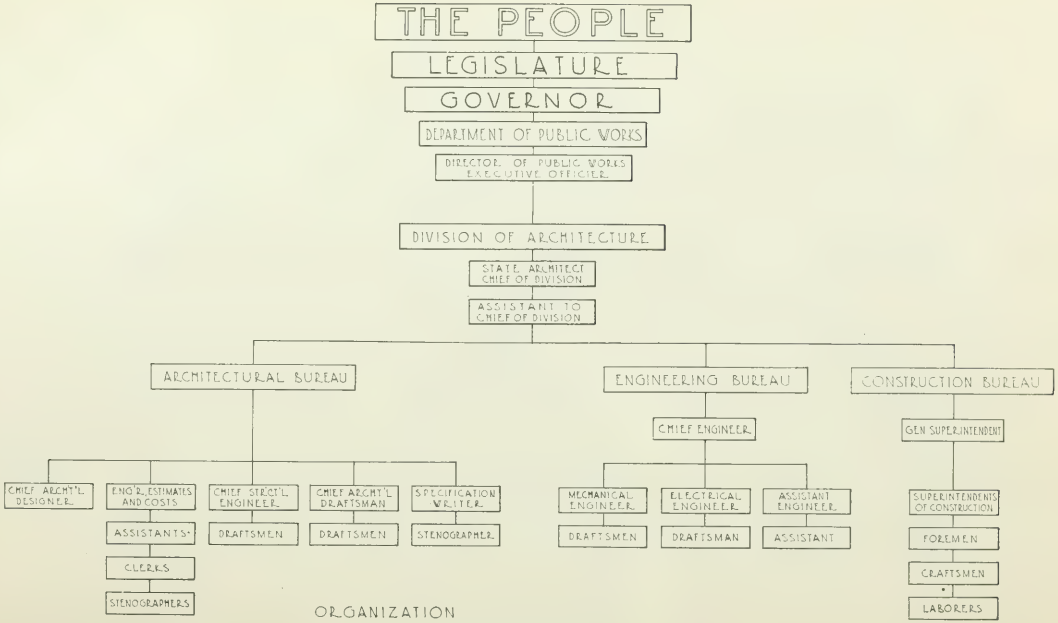


Organization Chart.

PERSONNEL.

FRIEND WILLIAM RICHARDSON ..... *Governor*
W. F. MCCLURE ..... *Director of Public Works*

DIVISION OF ARCHITECTURE.

GEO. B. MCDOUGALL ..... *Chief, Division of Architecture*
F. M. STEWART ..... *Assistant to Chief, Division of Architecture*

ARCHITECTURAL BUREAU.

Designing.

P. T. POAGE ..... *Architectural Designer*

Drafting.

W. K. DANIELS, Chief Architectural Draftsman.
F. W. DINGWELL, Architectural Draftsman.
E. A. LAVOND, Architectural Draftsman.
PAUL DAUM, Architectural Draftsman.
A. A. STRUBINGER, Architectural Draftsman.
GEO. GLACKEN, Apprentice Draftsman.

Estimating and Day's Labor Projects.

C. E. BERG, Engineer Estimates and Costs.
R. P. ADAMS, Estimator.
C. O. PALM, Chief Clerk and Secretary.
A. H. HENDERSON, Junior Clerk.

Structural Engineering.

C. H. KROMER, Chief Structural Engineer.
D. H. MCMILLAN, Structural Draftsman.
F. M. GREEN, Structural Draftsman.

Contracts, Material Investigation and Specifications.

CARLTON PIERSON ..... *Specification Writer*

ENGINEERING BUREAU.

W. K. POTTS ..... *Acting Chief Engineer*

Mechanical Engineering.

C. A. HENDERLONG, Mechanical Draftsman.
E. L. HOLMAN, Mechanical Draftsman.
L. E. RUSHTON, Mechanical Draftsman.

Electrical Engineering.

W. H. ROCKINGHAM ..... *Chief Electrical Engineer*

Hydraulic Engineering and Surveying.

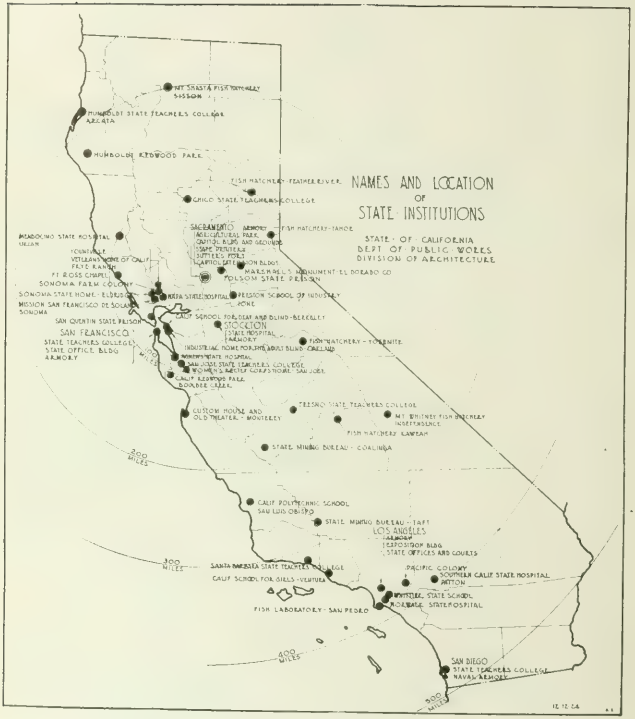
A. J. BEAKEY, Assistant Engineer.
G. M. RICHARDS, Junior Draftsman.

CONSTRUCTION BUREAU.

J. W. DUTTON, General Superintendent.
G. N. BERGREN, Superintendent Building Construction.
H. V. GRANT, Superintendent Building Construction.
J. E. METZGER, Superintendent Building Construction.
O. L. MORTON, Superintendent Building Construction.
B. C. TARVER, Superintendent Building Construction.
C. M. WEBER, Superintendent Building Construction.
F. D. BARR, Assistant to Superintendent Building Construction.
H. E. J. WOODHAMS, Assistant to Superintendent Building Construction.
A. G. MORTON, Timekeeper.
F. J. ROBINSON, Mechanical Foreman.
C. A. BREUILLOT, Electrical Foreman.
G. H. KNEPPLER, Foreman of Construction.
Z. J. MONTGOMERY, Foreman of Construction.

MISCELLANEOUS.

MRS. ANNIE ASTILL, Stenographer.
MRS. RUTH MCCLELLAND, Stenographer.
MAE SULLIVAN, Stenographer.
D. P. RYAN, Shipping and Filing Clerk.



Map of California.

REPORT OF THE DIVISION OF ARCHITECTURE. STATE DEPARTMENT OF PUBLIC WORKS.

Geo. B. McDougall,
Chief of Division.

HISTORY AND PURPOSE.

The State Department of Engineering, of which the Bureau of Architecture was a part, was created by an act of the legislature, approved March 11, 1907, chapter 183, Statutes of the year 1907, and was organized in the May following. The Bureau of Architecture was organized very shortly thereafter and immediately began its activities.

On July 30, 1921, changes in the organization of the state government, as made by the legislature of 1921 and approved by the Governor, went into effect. The former Department of Engineering, with its Bureau of Architecture, was abolished and its functions transfered to the Department of Public Works, with five divisions, of which the Division of Architecture was one. On August 17, 1923, a new Department of Public Works was created under chapter 286, Statutes of the year 1923, which provided for three divisions, of which the Division of Architecture is one. The activities of the Division of Architecture and the former Bureau of Architecture cover, therefore, a period of approximately seventeen years.

During the first few years of its existence the work of the Bureau of Architecture consisted almost entirely of the preparation of plans and specifications for new buildings, repairs and alterations to existing buildings, and general supervision of the construction thereof. The work was therefore similar to that of the average architect of private practice, except for the fact that construction has in most cases been at a considerable distance from the central office. As the years have passed, however, the responsibilities have constantly increased, as has also the number of institutions and general building activity in the state, until the present large force is required to handle the work. The duties of the Division of Architecture at the present time may be summed up as follows:

To make plans and specifications for all new buildings of a value in excess of $1,000 at the various state institutions; to let contracts for and superintend their erection, or, in case satisfactory contracts can not be made, to construct the buildings by day labor; to care for all alterations and repairs to existing buildings, on the same basis where the amount involved is in excess of $1,000; to design and install all heating, lighting, ventilating, refrigerating, water supply, mechanical and electrical plants of every nature—whether changes, extensions, or original; survey grounds, lay out walks, drives and roads; provide water supply, sewer and drainage systems, requiring the design and construction of dams, reservoirs, pipe lines, wells, pumping plants, ditches, sewage treatment and disposal plants and drains.

The State of California has at the present time twenty-seven major institutions, at which the division functions as outlined in the preceding paragraph. In addition to these, there were twenty places at which either construction of some kind was supervised, or expert assistance given during the past two years.

Cottage for Day Employees, Sonoma State Home, Eldridge, California.

These forty-seven points of activity are scattered from one end of the state to the other, this element of distances to overcome being one of the most difficult of the conditions surrounding the activities of the division. The map printed herewith shows the names and location of these places.

ORGANIZATION.

The organization of the Division of Architecture, together with the number and distribution of its employees, are indicated by an organization chart and personnel on pages 6 and 7. In addition, the Division maintains, in conjunction with the Division of Engineering and Irrigation and Division of Water Rights, an accounting department of seven employees.

The present organization, which is the result of gradual evolution and a thorough study by the executive heads of the Division, has proven to be practically perfect by more than seven years of experience. Definite authority and responsibility have been fixed to such a degree that friction and overlapping of activities are reduced to a minimum. The nature of the work of the Division and of the state's property at its various institutions is such as to require the services of the heads of the various branches, and of some other employees in the three sections making up the Division, continuously during twelve months of the year. The duties of these men are executive or of a general character that renders a proper segregation of the time spent on different jobs impracticable. There are twelve of these continuously employed and they make up what might be considered as the skeleton organization of the Division.

FINANCES OF THE DIVISION.

The expenses attendant upon the operation of the Division of Architecture are met as follows:

(1) Under chapter 121, the legislature of 1923 provided a salary fund for the Division of Architecture of $31,656. This amount is sufficient only to cover the salaries of the Chief of Division, Assistant to the Chief of Division, Acting Chief Engineer and General Superintendent of Construction.

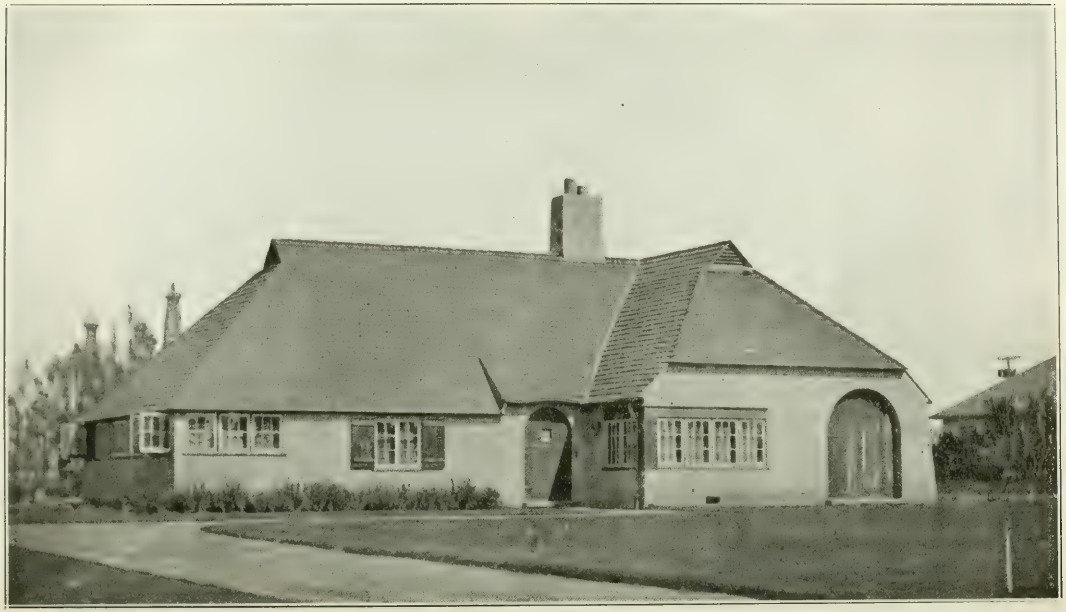
(2) All other employees are paid out of special appropriations for construction or billed to the department or institution for which the work is done. An exact record of the time spent on each project is kept and the value of this time, based on salary paid, is deducted from the appropriation or billed to the department or institution at the end of each month.

(3) By an appropriation for support, chapters 121–23, amounting to $20,350, which covers traveling expenses, including automobiles as required by the employees continuously employed, telegraph and telephone, postage, office supplies, printing and furniture.

OPERATION OF THE DIVISION.

Under the subject of operation, the activities of the Division of Architecture can be listed under three main subdivisions:

(1) Construction by contract or subcontracts.
(2) Construction by day labor.
(3) Miscellaneous activities.



Assistant Physician's Residence, Norwalk State Hospital, Norwalk, California.

A brief explanation of the services performed under each of the three headings will give an understanding of services that are being rendered.

Construction by Contract.

A full understanding of the project in hand is first obtained by visits to the site by the members of the section most intimately concerned, and by full discussions with the head of the institution and his or her assistants. Complete preliminary sketches and itemized estimates of cost based on them are made; conferences are continued with the institution authorities and any required adjustments made, until both the plans and the estimated cost are satisfactory. Formal approvals on the above are then requested of those in authority to proceed with the work on a definite basis. These being given, the working drawings are then prepared, including the architectural, structural, mechanical and electrical scale drawings, and all typical full-size architectural details. Specifications are written covering all branches of the work separated according to trades involved. After bids have been received, the contract papers are executed, additional approvals obtained, after which actual construction is ordered ahead. A special inspector is put in charge, in accordance with the requirements of law, to see that the interests of the state are protected. On small and relatively unimportant projects, this requirement is often met by securing the assistance of an institution official, qualified and willing to care for the work along with his regular duties.

The office maintains a constant general supervision over all work in the field by periodical trips, correspondence, etc.

The auditing of all accounts, payments of all claims, and similar work is cared for by the Accounting Department.

Construction by Day Labor.

The method used in handling this type of work is exactly the same as for contracts up to the point of making working drawings. As the construction is in the direct charge of the Division, it is not necessary that such complete drawings be prepared. Skeleton specifications are written and other necessary information is conveyed by notes on the drawings, or by letter to the superintendent or general foreman in charge.

Complete bills of materials for all branches of the work are prepared in the office, and, where practicable, are checked by the representative in the field. Requisitions are then prepared and sent to the State Purchasing Agent, who attends to the actual purchases. Great care is necessary in the preparation of the lists and descriptions, as the whole transaction lacks the possibility of personal touch between buyer and seller; and, as the average time required from the issuance of the requisition to the delivery of the material is about three weeks, it is obvious that mistakes in deliveries, which could disrupt the entire program, must be prevented.

In connection with mill work and similar items, it has been found advantageous to detail and list off accurately every piece of milled stock required, all doors, sash, etc., and furnish the bidders with such

Cottage No. 21, Whittier State School, Whittier, California.

complete information. This takes the place of the usual "mill bid" of commercial practice, where there is always a chance of misunderstanding as to limits of requirements, and which furthermore requires each and every bidder to list off the materials, for which unnecessary multiple service the state would have to pay. Such work naturally increases overhead costs, but this is considerably more than offset by the lower bids received for the materials.

All necessary mechanics and laborers are employed direct, this alone requiring considerable attention by the office force, due to the necessity of securing such assistance through the medium of the Civil Service Commission, with the attendant additional burden of clerical work.

All accounts are audited as mentioned under contract work, these representing much more detail, since all claims for labor and every individual purchase of materials must be taken care of separately.

Day labor construction work is handled in the field by a competent superintendent of construction; this agent of the Division being an active director of construction work rather than one who simply inspects the work of others as in the case of contract work. At weekly intervals on day labor work he reports to the office on the total amount of work done on a project, which, with the segregation of his payroll and cost accounting system maintained in the central office, enables the Division at any time to know whether or not a project is being completed within the original amount estimated.

Miscellaneous Work.

This subdivision includes all the activities of various sections of the Division over and above those directly related to projects for which money has actually been appropriated.

Assistance of an advisory nature is constantly being rendered the various departments and institutions, in connection with technical subjects. Sketches and estimates are prepared for considerable proposed work that is never carried to completion. Development plans for the new institutions, and for proposed changes in the older ones, are constantly being worked on. Also plot plans showing existing conditions, that the Division has never been able to finance in a comprehensive way, and the lack of which represents a serious handicap, are kept up to date to the best of our ability.

It is not possible to give an accurate account of the amount of time spent by the employees of the Division on this miscellaneous work. It is safe to say, however, that as a minimum estimate one-third of the time of the employees included in the skeleton organization is devoted to the handling of these miscellaneous details.

When working drawings for a project are started in the drafting room, a decision is made by the executive head of the Division on the method of construction to be followed; that is, whether the work shall go ahead on a basis of contracts, subcontracts, or day labor. The contract method is used where the work is conveniently located, where the estimates indicate that the cost will be large enough to attract sufficient bidding, where the state is unable to supply any labor or materials, and when some special type of labor or equipment is needed for the proper execution of the work.

School and Assembly, Whittier State School, Whittier, California.

Subcontracts are made in some cases rather than a general contract, where it can be demonstrated that a saving to the state can be effected in handling the work in this manner. When such a procedure is followed, the Division of Architecture acts in the same capacity as a general contractor. Construction work on the Sacramento state buildings is being carried on by the subcontract method.

The day labor plan is adopted at some institutions where inmate labor is available for construction work, at isolated institutions which do not attract the bidding of contractors, and on some repair and alteration jobs which are often difficult to cover by contract. In many cases where a job is handled by day labor, certain portions of the work are let to subcontractors where it is demonstrated that a saving to the state can be made or a better grade of work secured.

In view of the fact that from four to six weeks elapse from the time obligations accrue until the claims covering them can be approved and paid, the legislature has provided for the use of the Department a cash revolving fund of $30,000 appropriated by chapter 419, Statutes of the year 1917, to be used in advancing cash payments for labor, material and supply bills where such payments are necessary for the proper conduct of the business of the Department.

This cash revolving fund of $30,000 is for the joint use of the Division of Engineering and Irrigation and the Division of Architecture, $5,000 having been allotted to the Division of Engineering and Irrigation and $25,000 to the Division of Architecture.

The volume of day labor work being done by the Division of Architecture, as indicated hereinabove, is such that this amount of $25,000 has proven insufficient, so much so that the Department of Finance has loaned to the Division, to be paid back on demand, the sum of $22,000.

FUNDS AVAILABLE FOR CONSTRUCTION WORK.

On July 1, 1922, there was available for construction $6,178,452.51. To this amount must be added $1,131,510 appropriated by the 1923 legislature and $67,484.80 transferred to the Division of Architecture from contingent and other funds of institutions and departments, which total $7,377,447.31. During the biennium $224,144.01 was transferred to the institution for the purchase of equpment, etc., and on June 30, 1924, there was a balance of $2,643,702.31 still available for construction purposes. Deducting these two latter amounts from the $7,377,447.31 available on July 1, 1922, left $4,509,600.99 expended during the biennium for construction purposes.

PROGRESS OF WORK USING AVAILABLE FUNDS.

Using the funds mentioned above, the following report indicates the progress made on construction work by the Division of Architecture during the period from July 1, 1922, to July 1, 1924. The report shows the work grouped under the various institutions indicates the funds used, the various projects with actual or estimated costs under these funds and the status of the work on July 1, 1924.

Report indicating status of construction work provided by the 1923 Legislature and showing the progress which has been made during the period of July 1, 1923, to July 1, 1924.

Agnews State Hospital, Agnew.

Chap. 121–1923—Permanent improvements, $7,000. Sketches prepared.

California School for Blind, Berkeley.

Chap. 121–1923—Construction and equipment of new buildings, $90,000. Sketches prepared.

California Schools for Deaf and Blind, Berkeley.

Chap. 121–1923—Repairs, improvements and equipment, $14,550.
App. 424, W.O. 556—Transfer to institution, $8,735.

California School for Girls, Ventura.

Chap. 121–1923—Permanent improvements, $300. To be used for miscellaneous repairs.

Chico State Teachers College.

Chap. 121–1923—Permanent improvements and repairs, $10,000.
Pro. 319, W.O. 583—Miscellaneous repairs to buildings and grounds, $8,000. Under construction.
App. 353, W.O. 496—Transfer to institution, $600.
App. 379, W.O. 519—Transfer to institution, $600.

Folsom State Prison, Represa.

Chap. 121–1923—Permanent improvements, $23,000.
Pro. 278, W.O. 497—Repairs to gates in power house, $3,500. Under construction.
Pro. 279, W.O. 498—Repairs to cottages, plumbing, wiring, etc., $9,250. Under construction.
App. 388, W.O. 499A—General repairs and improvements, $7,000. Under construction.
App. 388, W.O. 499B—Ice storage house, $1,250. Under construction.
App. 388, W.O. 499C—Rock crushers and pulverizer, $2,000. Under construction.

Fresno State Teachers College, Fresno.

Chap. 121–1923—Repairs, $5,000.
Pro. 267, W.O. 488—Repairs to cafeteria and general repairs, $1,500. Under construction.
Pro. 334, W.O. 599—Purchase and installation of deep well turbine pump, $1,500. Under construction.
Pro. 335, W.O. 606—Exterior painting of buildings, $1,800. Under construction.
App. 391, W.O. 523—Transfer to institution, $200.
Chap. 121–1923—Paving, $10,000.
App. 406, W.O. 540—Transfer to institution, $10,000.

Industrial Home for Adult Blind, Oakland.

Chap. 121–1923—Permanent improvements, $10,000.
Pro. 302, W.O. 530—Removal of bake shop from basement to first floor, rearrangement of kitchen and reconstruction of dining room for help in building containing existing kitchen, $7,300. Completed.
Pro. 302A, W.O. 563—Purchase and installation of equipment for reconstruction of bake shop, dining rooms and kitchen, $2,700. Completed.
Chap. 121–1923—New equipment, $1,762.30.
Pro. 313, W.O. 573—Purchase of kitchen equipment, $734.80. Completed

Mendocino State Hospital, Talmage.

Chap. 121–1923—Permanent improvemntss, $59,900.
Pro. 282, W.O. 503—Remodeling of wards A, B, C, 4, 5 and 6, $45,000. Under construction.
Pro. 283, W.O. 504—Alterations and remodeling work in Assembly Hall, $5,500. Under construction.
Pro. 293, W.O. 518—Replastering and painting of ranch ward, $3,700. Under construction.
Chap. 121–1923—New equipment, $13,900.
Pro. 375, W.O. 501—Installation of new compressor and accessory equipment as required for cooling three existing cold storage rooms, $7,500. Completed.

Pro. 298, W.O. 527—Installation of about 8000 linear feet of 5-inch W.I. pipe, etc., $484.39.* Completed.

Mining Bureau (Ferry Building, San Francisco).

Mining Bureau Support Fund, Chap. 121–1923.
Pro. 266, W.O. 566—Alterations at Ferry Building, San Francisco, $2,300. Completed.

Mission San Francisco de Solano, Sonoma.

Chap. 409–1923—Restoration, care and upkeep of the Mission, $4,000.
Pro. 292, W.O. 517—Draining and grading of patio, water supplies to the building and the laying of a concrete sidewalk, $750. Completed.
Pro. 292A, W.O. 608—Repairs to rear corner of main building, next to driveway for vehicles into rear court, and replace broken tile, $100. Completed.

Napa State Hospital, Napa.

Chap. 121–1923—Permanent improvements, $55,460.
Pro. 315, W.O. 575—Cottage for infirm and chronic cases, $45,000. Under construction.
Chap. 121–1923—Permanent improvements, $55,460.
App. 369, W.O. 516—Transfer to institution, $2,000.
App. 409, W.O. 545—Transfer to institution, $2,500.
App. 410, W.O. 546—Transfer to institution, $5,960.

Norwalk State Hospital, Norwalk.

Emergency Resolution 13—Chapter 121–1923.
Pro. 303, W.O. 538—Drilling new water well, $5,000. Completed.

Preston School of Industry, Ione.

Chap. 121–1923—Permanent improvements, $9,000.
Pro. 307, W.O. 552—Machine shop, $5,000.* Under construction.
Pro. 317, W.O. 578—Placing 720 feet redwood flume in irrigation and power ditch, $750. Completed.
Pro. 339, W.O. 612—Concrete pipe, valves, etc., for irrigation system, $2,500. Completed.
Chap. 121–1923—New equipment, $2,625.
Pro. 322, W.O. 594—Sawdust exhaust system, $2,000. Completed.

San Diego State Teachers College, San Diego.

Chap. 121–1923—Repairs, $15,000.
Pro. 268, W.O. 489—Repairs to buildings, including roof repairs, plastering, painting and building of brick stack for pottery kiln, $2,900. Completed.
Pro. 269, W.O. 482—General repairs, $9,900. Completed.
Pro. 299, W.O. 528—General repairs, including material for a pergola screen, reconstructing portable bleachers, etc., $2,064.92. Under construction.

San Francisco State Building, San Francisco.

Chap. 6–19923—Completion of San Francisco State Building, $205,900.**
App. 257, W.O. 420—Completion of San Francisco State Building, $205,900. Completed.
Compensation Insurance Fund.
Pro. 318, W.O. 577—Alterations in offices of Compensation Insurance Fund, $3,000. Under construction.

San Francisco State Teachers College.

Chap. 121–1923—Repairs, $10,000.
Pro. 336, W.O. 607—Repairs to main school building, $2,500. Completed.
App. 449, W.O. 572—Transfer to institution, $5,000.

San Jose State Teachers College, San Jose.

Chap. 121–1923—Permanent improvements and repairs, $13,500.
Pro. 341, W.O. 615—Repairs to roof trusses in library, $800. Completed.
App. 366, W.O. 512—Transfer to institution, $500.

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*In addition to this amount, $10,015.61 is being supplied from Chap. 256–1921.
*In addition to this amount, $8,693 is being supplied from Chap. 907–1921.
**Emergency Appropriation made available in February, 1923.

Chap. 121–1923—Permanent improvements and repairs, $13,500.
App. 420, W.O. 554—Transfer to institution, $500.
App. 453, W.O. 579—Transfer to institution, $500.
App. 495, W.O. 617—Transfer to institution, $1,000.

Santa Barbara State Teachers College, Santa Barbara.

Chap. 121–1923—Permanent improvements and repairs, $15,000.
Pro. 325, W.O. 588—Repairs and painting work, exterior and interior of existing buildings, $5,000. Under construction.
App. 439, W.O. 565—Transfer to institution, $600.

Sonoma State Home, Eldridge.

Chap. 121–1923—Permanent improvements, $109,500.
Pro. 270, W.O. 513—Reconstruction of residence for assistant physician, $5,500. Completed.
Emergency Fund, Emergency Resolution 50, Chapter 121–1923.
Pro. 288, W.O. 511—Purchase and installation of new 200-h.p. boiler, $16,000. Under construction.

Southern California State Hospital, Patton.

Chap. 121–1923—Permanent improvements, $98,000.
Pro. 264, W.O. 486—Four cottages for patients, $98,000. Under construction.

Stockton State Hospital, Stockton.

Chap. 121–1923—Permanent improvements, $177,200.
Pro. 274, W.O. 500—Additions to water system for domestic and fire protection purposes, $8,000. Under construction.
Pro. 287, W.O. 509—Cottage for patients at the farm, $52,000. Under construction.
Pro. 290, W.O. 515—Permanent installation of steam service for cottage C, $2,000. Completed.
Pro. 308, W.O. 559—New boiler and fittings at engine room and cost of installing boiler, $19,000. Under construction.
Pro. 309, W.O. 560—Purchase and installation of sand trap, $1,000. Under construction.
Pro. 321, W.O. 593—New well, pump and fittings, $5,000. Under construction.
Pro. 333, W.O. 605—Second cottage for patients at farm, $77,500. Under construction.
App. 417, W.O. 553—Transfer to institution, $5,000.
App. 443, W.O. 567—Transfer to institution, $5,700.

Veterans' Home, Yountville.

Chap. 121–1923—Permanent improvements, $36,000.
Pro. 272, W.O. 490—Replacing present wood water pipe with steel pipe for a portion of the length of the Rector Canyon, $15,000. Under construction.
Chap. 121–1923—Permanent improvements, $36,000.
Pro. 286, W.O. 508—Repairs to interior and exterior of hospital building, including carpenter and painting work, also roof repairs, $3,000. Under construction.
Pro. 305, W.O. 539—Painting of existing buildings, $5,000. Under construction.
Pro. 314, W.O. 584—Horse barn and auto shed, $5,000. Under construction.
App. 387, W.O. 492—Reshingling and reflooring, etc., $5,000. Under construction.
App. 387, W.O. 492A—Repairs to bakery, $1,000. Under construction.
App. 387, W.O. 492B—Sheet metal work, $1,000. Under construction.
App. 387, W.O. 492C—Replacing wooden water pipe, $1,000. Under construction.
Veterans' Home Support Fund, Chap. 121–1923.
Pro. 324, W.O. 589—Plot plan of grounds and buildings, $1,000. Under construction.
Pro. 342, W.O. 620—Completion of painting of hospital building and painting of additional buildings, $6,500. Under construction.

Whittier State School, Whittier.

Chap. 121–1923—Permanent improvements, $20,000. Nothing has been done; money to revert.
Chap. 121–1923—Repairs, $10,000.
Pro. 326, W.O. 596—Repairs to kitchen and minor repairs to buildings, $6,518.61. Completed.
App. 455, W.O. 582—Transfer to institution, $3,481.39.

Woman's Relief Corps Home, Santa Clara.

Chap. 121–1923—Repairs, $1,500. Minor repairs being done as needed.

SUPPLEMENTARY.

List of projects handled under appropriations made previous to the 1923 legislature, and covering period from July 1, 1922, to July 1, 1924.

Agnews State Hospital, Agnew.

Chap. 252–1921—Repairs, improvements and dairy herd at farm, $25,000.
Pro. 281, W.O. 502—Steel tank tower, $2,500. Completed.
Pro. 211, W.O. 395—Residence for business manager, $7,000. Completed.
App. 277, W.O. 441—Transfer to institution, $17,250.
Chap. 253–1921—Repairs, improvements and equipment, $53,500.
Pro. 237, W.O. 438—Painters' and unholsterers' shop, grand stand and miscellaneous repairs, $10,862. Under construction.
Pro. 17A, W.O. 348—Additional work on greenhouses, $260. Completed.
Pro. 175, W.O. 330—Construction of warehouse building, $2,100. Completed.
Pro. 194, W.O. 356—Retiling floors of main kitchen, $5,000. Completed.
Chap. 253–1921—Repairs, improvements and equipment, $53,500.
Pro. 197, W.O. 367—Motorizing of present ice machine, $800. Completed.
App. 260, W.O. 425—Transfer to institution, $500.
Chap. 881–1921—Quarters for employees, $100,000.
Pro. 233, W.O. 423—Building for employees, $82,000. Completed.
App. 446, W.O. 568—Transfer to institution, $15,000.
Chap. 568–1919—Cottages and living quarters for employees, $22,000.
Pro. 209, W.O. 390—Additions to two physicians' residences, $550. Completed.
App. 305, W.O. 457—Transfer to institution, $60.

Agricultural Park, Sacramento.

Chap. 296–1921—Repairs and improvements to buildings and grounds, $40,000.
Pro. 162, W.O. 292—Two frame additions to educational building, $2,000. Completed.
Pro. 163, W.O. 293—Horse show arena, $7,000.* Completed.
Pro. 163A, W.O. 336—Horse show arena, $500.*
Pro. 218, W.O. 399—Miscellaneous repairs to horse show arena and other buildings, $76.04.
App. 155, W.O. 306—Transfer to Agricultural Society, $1,163.66.
App. 310, W.O. 459—Transfer to Agricultural Society, $158.49.
Contingent Fund.
App. 247, W.O. 418—Transfer to Agricultural Society, $14.90.

California Polytechnic School, San Luis Obispo.

Chap. 440–1921—Repairs, improvements and equipment, $91,800.
Pro. 177, W.O. 334—Mescellaneous repair work and remodeling of existing storeroom, $3,500. Completed.
Pro. 256, W.O. 256—Miscellaneous repairs and improvements, $1,200. Completed.
App. 173, W. O. 329—Transfer to institution, $4,000.
App. 454, W.O. 580—Transfer to institution, $1,928.35.
App. 553, W.O. 664—Transfer to institution, $177.07.
Chap. 445–1919—Repairs, improvements and equipment, $10,000.
App. 454, W.O. 581—Transfer to institution, $29,65.

California Redwood Park, Santa Cruz.

Chap. 416–1921—Repairs, improvements and equipment, $25,000.
Pro. 16A, W.O. 344—Construction of cabins, $2,500. Completed.
Pro. 242, W.O. 444—Septic tank and necessary pipe connections as required in connection with sewage disposal system at the park, $1,000. Completed.
Chap. 416–1921—Repairs, improvements and equipment, $25,000.
Pro. 296, W.O. 524—Purchase and installation of water pipe for additional water supply, $3,100. Completed.
Pro. 296A, W.O. 586—Purchase and installation of water pipe for additional water supply, $994.92. Completed.
App. 272, W.O. 434—50,000-gallon redwood stave water storage tank, $1,100. Completed.
App. 188, W.O. 354—Transfer to California Redwood Park Commission, $3,000.

California School for Girls, Ventura.

Chap. 265–1921—Repairs, improvements, equipment and furnishings, $45,500.
Pro. 160, W.O. 308—Miscellaneous painting work, $6,000. Completed.

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*Total cost, $14,300; $6,800 being supplied from contingent fund of Agricultural Society.

Pro. 188, W.O. 345—Miscellaneous painting and repair work, $3,480. Completed.
Pro. 188A, W.O. 358—Miscellaneous painting and repair work, $3,000. Completed.
Pro. 188B, W.O. 378—Finishing maple floors and miscellaneous painting work, $7,000. Completed.
Chap. 266–1921—Water supply, $11,000.
Pro. 295, W.O. 521—Water meters and water hose, $500. Completed.
Pro. 306, W.O. 534—Replacement of irrigation pipe, $500. Completed.
Chap. 452–1919—Furnishing and equipping cottages.
Pro. 207, W.O. 386—Installation of linoleum in various cottages, $1,215. Completed.
App. 290, W.O. 447—Transfer to institution, $170.20.
Chap. 584–1919—Completion of a cottage unit, $20,000.
Pro. 178, W.O. 350—Addition to laundry, $1,837.30. Completed.

California Schools for Deaf and Blind, Berkeley.

Chap. 261–1921—Repairs, improvements and equipment, $25,000.
Pro. 167, W.O. 304—Additional repair work, $800. Completed.
Pro. 190, W.O. 349—Superintendent's residence, $8,500. Completed.
Pro. 190A, W.O. 379—Superintendent's residence, $750. Completed.
Pro. 230, W.O. 422—Ground improvements and service, $400. Completed.
Pro. 248, W.O. 456—Cutting an opening through stone wall and construction of concrete steps and walks; also staining of roof shingles, $250. Completed.
Chap. 293–1917—Completion of the heating plant, $21,000.
Pro. 225, W.O. 415—Miscellaneous heating repairs, $389.56. Completed.

Chico State Teachers College, Chico.

Chap. 557–1919—Development of water and equipment for the water supply, $10,000.
App. 408, W.O. 542—Transfer to institution, $39.44.
Chap. 558–1919—Repairs to buildings and equipment, $6,000.
App. 408, W.O. 543—Transfer to institution, $5.96.
Chap. 559–1919—Trade school unit (construction only).
App. 408, W.O. 544—Transfer to institution, $32.88.

Fish and Game Commission, San Pedro.

Fish and Game Preservation Fund.
App. 291, W.O. 448—Transfer to Fish and Game Commission, $56.88.

Folsom State Prison, Represa.

Chap. 394–1921—Repairs, improvements, completion of buildings and extensions of wall, $52,000.
Pro. 189, W.O. 351—Cost of materials, including lumber, glass and pipe, $1,500. Completed.
Pro. 210, W.O. 391—Barber shop and toilet building, $2,800. Completed.
Pro. 213, W.O. 394—Miscellaneous repair work, $1,342.53. Under construction.
Chap. 680–1921—Construction of five cottages for officers and employees, $15,000.
Pro. 199, W.O. 368—Cottage for an employee, $1,800. Completed.
Chap. 422–1919—Machine and blacksmith shop (construction and equipment), $4,000.
App. 278, W.O. 440—Transfer to institution, $1,279.05.

Humboldt Redwood Park.

Chap. 871–1921.
Pro. 75C, W.O. 363—Water supply system for Devoy Grove, $500. Completed.
Pro. 245, W.O. 449—One mile Royal fence, water line for Richardson grove, a Kohler electric lighting system, bronze plaques and granite blocks for markers, $2,775. Completed.

Industrial Farm for Women, Sonoma.

Chap. 165–1919.
App. 465, W.O. 595—Transfer to Department of Institutions, $2,678.78.

Industrial Home for the Adult Blind, Oakland.

Chap. 397–1921—Repairs, improvements, furniture and equipment, $12,500.
Pro. 204, W.O. 375—Miscellaneous repairs to broom factory, $3,200. Completed.
Pro. 204A, W.O. 531—Miscellaneous repairs to broom factory, $432.51. Completed.
Pro. 311, W.O. 569—Alterations in dormitory, $1,500. Completed.
Chap. 687–1921—Buildings and equipment, $76,300.
Pro. 221, W.O. 402—Construction and equipment of buildings, $73,248. Completed.
App. 494, W.O. 616—Transfer to institution, $208.67.

Lake Tahoe Fish Hatchery.

Fish and Game Preservation Fund.
App. 428, W.O. 557—Transfer to the Fish and Game Commission, $64.49.

Mendocino State Hospital, Talmage.

Chap. 255–1921—Repairs, improvements and equipment, $62,660.
Pro. 156, W.O. 289—Hauling river gravel, $500. Completed.
Pro. 157, W.O. 288—Removal of present brick setting of two boilers, $3,000. Completed.
Pro. 126A, W.O. 328—Additional work to main kitchen, $8,000. Completed.
Pro. 126B, W.O. 471—Additional sheet metal work in main kitchen, $188.31. Completed.
Pro. 183, W.O. 340—Construction of sewage disposal unit, $5,000. Completed.
Pro. 200, W.O. 374—Repairs to female tubercular cottage, $700. Completed.
Pro. 229, W.O. 419—Cold storage rooms, $2,500. Completed.
Pro. 231, W.O. 426—Maple flooring in Ward 1, $1,900. Completed.
Pro. 236, W.O. 437—Repairs to roof trusses over Assembly Hall, $1,000. Completed.
Pro. 261, W.O. 481—Alterations to first floor main building, $1,729.90. Completed.
Pro. 331, W.O. 603—Miscellaneous repairs and alterations, $850.85. Under construction.
Chap. 256–1921—Water supply, $25,000.
Pro. 159, W.O. 307—Steel water line, $12,000. Completed.
Pro. 165, W.O. 311—Installation of partial irrigating system, $1,600. Completed.
Pro. 165A, W.O. 409—Additional work on irrigating system, lower ranch property, $1,400. Completed.
Chap. 399–1921—Receiving building and service connections (construction and equipment), $150,000.
Pro. 304, W.O. 533—Receiving building, $150,000. Under construction.
Chap. 296–1917—New laundry and bakery (construction and equipment), $28,000.
Pro. 243, W.O. 450—Repairs to laundry, $570.35. Completed.
Contingent Fund.
Pro. 97A, W.O. 300—Composition brick-making plant, $1,500. Completed.
Pro. 97B, W.O. 321—Composition brick-making plant, $2,000. Completed.
App. 363, W.O. ____—Transfer to institution, $5.04.

Mining Bureau, Taft.

Petroleum and Gas Fund.
Pro. 246, W.O. 452—Addition to peg modeling room, extension of porch and open shelter for day storage of automobiles at Taft, $8,043. Completed.
App. 380, W.O. 520—Trensfer to State Mining Bureau, $1,758.99.

Mount Whitney Fish Hatchery, Independence.

Fish and Game Preservation Fund.
App. 264, W.O. 428—Removal of clay tile roof covering from above building and replacing with corrugated iron, $3,200. Completed.
App. 429, W.O. 558—Transfer to Fish and Game Commission, $223.49.

Napa State Farm, Napa.

Chap. 739–1921—General improvements, $25,000.
App. 204, W.O. 372—Transfer to institution, $8,745.90.

Napa State Hospital, Imola.

Chap. 447–1921—Repairs, improvements and equipment, $95,000.
Pro. 155, W.O. 291—Alterations to laundry, including moving two hot water tanks, $2,000. Completed.
App. 433, W.O. 561—Transfer to institution, $800.
Chap. 318–1921—Removal, disposal and care of bodies, $7,500.
Pro. 253, W.O. 470—Crematory, $7,200. Completed.
App. 464, W.O. 591—Transfer to institution, $341.97.
Chap. 448–1921—Power house, equipment and steam distribution system, $34,000.
Pro. 174, W.O. 325—Installation of new 250-horsepower boiler and breeching, $17,000. Completed.
Pro. 251, W.O. 466—Alterations to present power plant building, $10,000. Completed.
Chap. 894–1921—Remodeling buildings, furniture and equipment, $19,095.79.
App. 327, W.O. 468—Transfer to institution, $9,384.79.
Chap. 859–1921—Cottage for patients (construction and equipment), $100,000.
App. 148, W.O. 303—Transfer to institution, $4,000.
App. 275, W.O. 442—Transfer to institution, $5,000.

Chap. 397–1919—Improvement to the heating plant, $2,500.
App. 306, W.O. 458—Transfer to institution, $317.20.
Contingent Fund.
Pro. 187, W.O. 369—Shop building, $3,000. Completed.
Pro. 195, W.O. 360—Improvement to to laundry, $4,000. Completed.
Pro. 238, W.O. 436—Rewiring barn, etc., $1,100. Completed.
Pro. 240, W.O. 446—Rebuilding portion of steam distributing system, also connecting new electric distribution system to existing services, $20,000. Under construction.
App. 271, W.O. 433—To renew steam line laterals, $5,000. Completed.
App. 328, W.O. 469—Transfer tn institution, $5,000.
App. 364, W.O. ____—Transfer to institution, $0.32.
App. 370, W.O. ____—Transfer to institution, $699.05.

Norwalk State Hospital, Norwalk.

Chap. 323–1921—Additional buildings, $434,000.
Pro. 149A, W.O. 427—Additional funds to complete cottage for male patients, $5,000. Completed.
Pro. 170, W.O. 322—Cottage for female patients, $60,000. Completed.
Chap. 323–1921—Additional buildings, $434,000.
Pro. 170A, W.O. 485—Additional funds to complete cottage for female patients, $15,000. Completed.
Pro. 180, W.O. 335—Assistant physician's residence, $6,700. Completed.
Pro. 180A, W.O. 413—Additional work on assistant physician's residence, $750. Completed.
Pro. 330, W.O. 602—Steam boiler with accessories, $2,500. Under construction.
Pro. 262, W.O. 494—Two cottages for patients, also installation of new steam boiler with accessories, also necessary service connections for these cottages, $245,000. Under construction.
Pro. 291, W.O. 514—Additional funds to complete cottages for male and female patients, $6,000. Completed.
Chap. 274–1921—Completion of buildings, improvements, equipment and furnishings, $28,000.
Pro. 300, W.O. 529—Raising, replacing in position and repairing of implement shed, $478.84. Completed.
App. 447, W.O. 571—Transfer to institution, $90.39.
Chap. 275–1921—Additional buildings, improvements to land, equipment, and live stock, $25,750.
Pro. 222, W.O. 406—Additional buildings at the farm, $2,342.44. Completed.
Chap. 585–1919—To purchase and install a steel water tower, tank and connections, $20,000.
Pro. 276, W.O. 495—Drilling water well and removing present pumping equipment and pump shelter to this well, $3,000. Completed.
Chap. 587–1919—Construction and furnishing of two cottages for patients, $150,000.
App. 144, W.O. 297—Transfer to institution, $9,995.22.

Pacific Colony, Spadra.

Chap. 776–1917—Purchase of site, construction and equipping of buildings, $250,000.
App. 167, W.O. 326—Transfer to institution, $2,073.38.

Preston School of Industry, Ione.

Chap. 907–1921—Repairs, improvements, equipment and furnishing, $184,900.
Pro. 158, W.O. 302—Miscellaneous repairs and improvements to buildings and grounds including repairs to kitchen, $15,000. Completed.
Pro. 172, W.O. 323—Improvements to water supply system, $24,900. Completed.
Pro. 172A, W.O. 341—Improvements to water supply system, $6,000. Completed.
Pro. 172B, W.O. 403—Improvements to water supply system, $13,000. Completed.
Pro. 192, W.O. 357—Two frame residences, $10,000. Completed.
Pro. 201, W.O. 382—Laundry building, $13,000. Completed.
Pro. 250, W.O. 472—Purchase and installation of laundry equipment, $9,835. Completed.
Pro. 250A, W.O. 610—Purchase and installation of laundry equipment, $218.36. Completed.
Pro. 316, W.O. 576—Alterations to trades building, $990. Completed.
Chap. 907–1921—Repairs, improvements, equipment and furnishing, $184,900.
Pro. 338, W.O. 611—Making of bricks, $800. Under construction.
App. 182, W.O. 346—Transfer to institution, $4,500.
App. 244, W.O. 416—Transfer to institution, $3,000.
Pro. 265, W.O. 432—Transfer to institution, $4,000.

Sacramento State Buildings.

Sacramento State Buildings Fund.
Pro. 69, W.O. 190—Brick work, granite and terra cotta, $1,143,306. Under construction.
Pro. 69, W.O. 190—Excavation, concrete and piling, structural steel, $614,840. Completed.
Pro. 112, W.O. 190—Drilling of water well, $550. Completed.
Pro. 112A, W.O. 389—Drilling of water well, $58.90. Completed.
Pro. 132, W.O. 223—Mill and shop inspection, $1,300. Completed.
Pro. 132A, W.O. 287—Mill and shop inspection, $350. Completed.
Pro. 132B, W.O. 343—Mill and shop inspection, $250. Completed.
Pro. 214, W.O. 397—Miscellaneous iron and bronze work, $90,800. Under construction.
Pro. 216, W.O. 381—Structural terra cotta, sheet metal and skylights, roofing, metal furring lath and plaster and imitation stone, glass and glazing, mechanical equipment, carpenter and mill work, marble, mosaic, terrazzo and tile and interior stone, $769,057. Under construction.
App. 215, W.O. 381—Modeling, $40,000. Under construction.
App. 450, W.O. 381—Modeling for interior plaster work for above buildings, $670. Completed.

San Diego State Teachers College, San Diego.

Chap. 449–1921—Repairs, improvements and equipment, $84,500.
Pro. 129A, W.O. 361—Additional remodeling of training school building, and three temporary class room buildings, $2,000. Completed.
Pro. 130A, W.O. 366—Alterations to basement of the main building, $1,000. Completed.
Pro. 226, W.O. 414—Alterations to fire alarm system, $150. Completed.
Pro. 234, W.O. 429—Repairs and improvements, $2,900. Under construction.
Pro. 234A, W.O. 480—Repairs, $6,126.34. Under construction.
Pro. 327, W.O. 598—Repair work, $1,900. Under construction.

San Francisco State Building.

Chap. 618–1919.
Pro. 215, W.O. 398—Mural painting, $8,000. Completed.
Pro. 247, W.O. 451—Acoustical treatment, $700. Completed.
App. 176, W.O. 333—Modeling, $499. Completed.
Railroad Commission Fund.
Pro. 205, W.O. 377—Alterations on sixth and first floors, $7,296. Completed.
App. 308, W.O. 464—Transfer to Railroad Commission, $1,268.47.

San Francisco State Teachers College.

Chap. 280–1921—Purchase of site, new buildings, repairs, improvements and equipment, $309,512.
Pro. 196, W.O. 350—Repairs to heating system, $550. Completed.
Chap. 280–1921—Purchase of site, new buildings, repairs, improvements and equipment, $309,512.
Pro. 196A, W.O. 385—Repairs to heating system, $750. Completed.
Pro. 196B, W.O. 401—Additional work on heating system, $200. Completed.
Pro. 227, W.O. 417—Gymnasium building, $66,000. Completed.
App. 458, W.O. 585—Transfer to institution, $3,500.

San Francisco State Armory.

National Guard Support Fund.
Pro. 202, W.O. 373—Repairs, $5,000. Completed.

San Jose State Teachers College.

Chap. 389–1921—Manual Arts and Home Economics Building, $205,000.
Pro. 220, W.O. 404—Manual Arts and Home Economics Building, $196,800. Completed.
App. 421, W.O. 555—Transfer to institution, $10,000.
App. 497, W.O. 618—Transfer to institution, $4,500.
Chap. 563–1921—Repairs, improvements and equipment, including new well, $26,500.
App. 159, W.O. 316—Transfer to institution, $1,200.
App. 195, W.O. 362—Transfer to institution, $2,500.
Contingent Fund.
Pro. 249, W.O. 465—Service connections, $3,500. Completed.

San Quentin State Prison.

Chap. 285–1917—New additions to farm buildings, $5,000.
Pro. 252, W.O. 467—Dairy buildings, $5,000. Completed.
Chap. 783–1921—Cottages for employees, $15,000.
Pro. 166, W.O. 301—Eight cottages for employees, $14,400. Completed.
Chap. 699–1921—Children's Hall (construction and equipment), $5,000.
Pro. 273, W.O. 491—Children's Hall, $5,000. Completed.
Chap. 401–1919—Completion of electrical installation, $6,650.
App. 274, W.O. 439—Transfer to institution, $81.79.
App. 301, W.O. 454—Transfer to institution, $6.99.

Santa Barbara State Teachers College.

Chap. 387–1921—Repairs, improvements and equipment, $20,000.
Pro. 255, W.O. 479—Two new sections in boiler, installing new Fess burner, changes in piping, covering boiler and other minor repairs to boiler plant, $750.32. Completed.
App. 160, W.O. 313—Transfer to institution, $3,500.
App. 440, W.O. 564—Transfer to institution, $84.06.
Chap. 451–1919—Repairs, improvements and equipment, $6,500.
App. 161, W.O. 317—Transfer to institution, $18.17.
Chap. 257–1917—Gymnasium building (construction and equipment), $20,000.
App. 161, W.O. 318—Transfer to institution, $13.21.

Sonoma State Home, Eldridge.

Chap. 564–1921—Repairs, improvements and equipment, $127,000.
Pro. 164, W.O. 310—Improvements to Maple and North cottages, $3,000. Completed.
Pro. 169, W.O. 312—Merit automatic stoking system on boilers, $1,800. Completed.
Pro. 171, W.O. 319—Reconstructing electric light, power, and telephone systems, $25,000. Completed.
Pro. 173, W.O. 324—Extensions to steam conduit lines and the heating of two girls' cottages, $7,000. Completed.
Pro. 182, W.O. 339—Alterations to kitchen wing of main building, $20,000. Completed.
Pro. 182A, W.O. 461—Completion of alterations to kitchen wing, etc., $4,000. Completed.
Pro. 203, W.O. 376—Installation of new oven in bakery, $3,000. Completed.
Pro. 257, W.O. 478—Completion of electric distributing system, installation of service connections for new buildings and changing roof covering of Assembly Hall, $11,886.49. Completed.
App. 460, W.O. 590—Transfer to institution, $259.24.
Chap. 317–1921—Quarters for employees (construction and equipment), $67,500.
Pro. 181, W.O. 338—Residence for assistant physician, $6,700. Completed.
Pro. 212, W.O. 393—Quarters for night employees, $23,000. Completed.
Pro. 244, W.O. 453—Quarters for day employees, $28,500. Completed.
App. 313, W.O. 463—Transfer to institution, $3,000.
App. 438, W.O. 562—Transfer to institution, $5,600.
App. 488, W.O. 609—Transfer to institution, $566.58.
Chap. 319–1921—Cottages (construction and equipment), $71,000.
Pro. 176, W.O. 327—Construction of a cottage for girls, $32,500. Completed.
App. 156, W.O. 315—Transfer to institution, $1,755.58.
App. 313, W.O. 462—Transfer to institution, $2,500.
App. 350, W.O. 493—Transfer to institution, $500.
App. 396, W.O. 525—Transfer to institution, $550.
App. 405, W.O. 537—Transfer to institution, $12.37.
Chap. 390–1921—School and Assembly Building (construction only), $100,000.
Pro. 232, W.O. 424—School and Assembly Building, $90,000. Under construction.
Pro. 232A, W.O. 455—Additional work in connection with school and Assembly Building, $6,000. Under construction.
Contingent Fund.
App. 164, W.O. 320—Transfer to institution, $210.25.

Southern California State Hospital, Patton.

Chap. 439–1921—Housing and training of patients, $90,000.
Pro. 223, W.O. 407—Shop Building, $6,250. Completed.
Pro. 223A, W.O. 431—Shop Building, $3,368.38. Completed.
App. 157, W.O. 314—Transfer to institution, $1,663.94.
App. 216, W.O. 387—Transfer to institution, $13.77.
App. 470, W.O. 597—Transfer to institution, $798.77.

Chap. 263–1921—Repairs, improvements and equipment, $45,540.
Pro. 161, W.O. 298—Residence for assistant physician, $4,500. Completed.
Pro. 161A, W.O. 371—Residence for assistant physician, $1,000. Completed.
Pro. 168, W.O. 305—Repairs to exterior plaster of cottage No. 16, $1,750. Completed.
Pro. 239, W.O. 443—Underground high voltage electric lines at patient worker's cottage, $1,000. Completed.
Pro. 265, W.O. 483—New roof Administration Building, also repairs, also service connections for cottages 1, 2, 3, 4, $8,450.72. Under construction.
App. 220, W.O. 388—Transfer to institution, $1,000.

State Capitol, Sacramento.

Chap. 409–1921—Repairs, improvements and alterations to and on the Capitol Building and grounds.
Pro. 186, W.O. 342—Remodeling sidewalk elevator, $2,262. Completed.
Pro. 310, W.O. 574—Alterations to driveway and new walks, $3,780. Completed.
App. 142, W.O. 296—Transfer to Department of Finance, $369.50.
App. 146, W.O. 299—Transfer to Department of Finance, $125.
App. 183, W.O. 347—Transfer to Department of Finance, $40.
App. 194, W.O. 365—Transfer to Department of Finance, $1,800.
App. 210, W.O. 380—Transfer to Department of Finance, $235.

State Nursery, Swingle.

Chap. 293–1921—Buildings (construction only), $20,000.
Pro. 217, W.O. 396—Miscellaneous repairs, $240. Completed.

State Printing Office, Sacramento.

Chap. 762–1917—New buildings, $100,000.
Pro. 179, W.O. 332—State Printing Plant, $100,000.* Completed.
Chap. 702–1921—New site and building, $75,000.
Pro. 179, W.O. 331—State Printing Plant, $38,000.* Completed.

Stockton State Hospital, Stockton.

Chap. 393–1921—Repairs, improvements and equipment, $87,200.
Pro. 219, W.O. 400—Repairs to steel water tower, $500. Completed.
Chap. 860–1921—Receiving Building, $150,000.
Pro. 191, W.O. 353—Receiving Building, $144,000. Completed.
App. 407, W.O. 541—Transfer to institution, $7,500.
Chap. 398–1919—Sewage disposal on the farm, $15,000.
Pro. 185, W.O. 352—Sewage disposal plant at the farm, $13,000. Completed.
Institution Contingent Fund.
Pro. 206, W.O. 392—Heating system in tubercular cottage, $500. Completed.
Pro. 241, W.O. 445—Extension of lighting system to include new cottage for disturbed patients and the new cottage for tubercular patients, $625. Completed.
App. 365, ____—Transfer to institution, $4.36.

Veterans' Home, Yountville.

Chap. 391–1921—Repairs, improvements, equipment and furnishings, $79,920.
Pro. 193, W.O. 370—Painting and repair work, $5,000. Completed.
Pro. 254, W.O. 474—Remodeling Co. "C" old quarters, etc., $6,500. Under construction.
Pro. 312, W.O. 570—Addition to surgeon's cottage, $1,500. Completed.
App. 382, W.O. 522—Transfer to institution, $235.

Whittier State School, Whittier.

Chap. 392–1921—Repairs, improvements and equipment, $198,000.
Pro. 114A, W.O. 309—Boys' cottage, $40,000. Completed.
Pro. 133A, W.O. 460—Assembly building, $15,000. Completed.
Pro. 235, W.O. 430—Service connections, $10,000. Completed.
Pro. 277, W.O. 505—Underpinning of the northwest corner of blacksmith shop building, $400. Completed.
App. 235, W.O. 405—Transfer to institution, $5,000.
App. 344, W.O. 487—Transfer to institution, $1,000.
App. 463, W.O. 592—Transfer to institution, $1,000.
App. 491, W.O. 614—Transfer to institution, $613.31.

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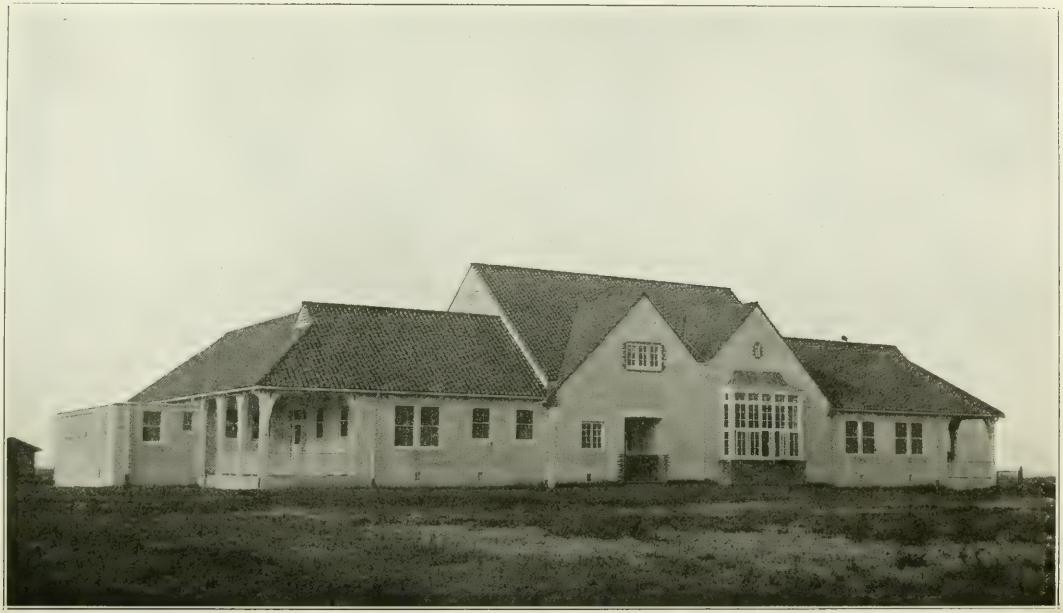
*Total cost $224,800; $86,000 being supplied from chapter 5–1923 for completion of the building.



Farm Cottage No. 2, Stockton State Hospital Farm, Stockton, California.

Chap. 446–1921—To augment, develop and improve the water supply and the water system, $330,000.
Pro. 329, W.O. 601—Survey of Rincon ditch, $2,000. Under construction.
Pro. 337, W.O. 613—Pump, motor, 2200 feet 6-inch steel pipe, $3,500. Under construction.
Chap. 629–1919—Construction of buildings, $64,000.
App. 143, W.O. 295—Transfer to institution, $449.12.
App. 242, W.O. 410—Transfer to institution, $5.
Chap. 355–1917—Power house (construction and equipment), $25,000.
App. 242, W.O. 411—Transfer to institution, $4.47.
Contingent Fund.
App. 242, W.O. 412—Transfer to institution, $106.53.

Woman's Relief Corps Home, Near San Jose.

Emergency Resolution 27—Emergency appropriation seventy-fourth fiscal year.
Pro. 198, W.O. 364—Low pressure steam heating system, $7,000. Completed.

The above report indicates that, in carrying on the construction work provided for the two-year period by the 1923 legislature, the Division of Architecture completed or had under construction more than half of the projects at the end of the first year. In addition, all preliminary work has been done on the balance of the program, so that when the next appropriations become available all of the projects for which money is now available will have been practically completed.

COST OF OPERATION.

The seventy-fifth fiscal year is taken as a typical year. The Division of Architecture during the seventy-fifth fiscal year expended $2,770,-265.47. Deducting $115,935.83 expended for salaries plus $10,175 expended for support equals $126,110.83 total expended by the Division or Architecture; there is left a total expenditure for actual construction amounting to $2,644,154.64, which figure shows a percentage of expenditure for salaries and support of the Division of Architecture of .047. Of the $2,644,154.64, approximately $315,000 was expended on work done entirely by contract; the remainder, $2,334,783.26, to which, on account of the use of patient and prisoner labor, at least $100,000 must be added to arrive at the actual value of the work, having been handled by the Division on the basis of day labor, which method, while considerably reducing the total cost of the work, entails greater expense for operating the Division of Architecture than the contract method.

As explained under the portion of this report devoted to the operation of the Division of Architecture, a considerable amount of time and money is spent by the employees of the Division in handling the miscellaneous activities at the various state institutions; these services rendered being in addition to the work on the actual projects under consideration.

The customary fee for straight architectural services is 6 per cent. At a cost of approximately 4.7 per cent to the state, the Division of Architecture has rendered on the work considered the usual architectural services and in addition has superintended and built a large percentage of the projects on a basis of day labor, which involves the listing, ordering and delivery of materials, the employment of competent workmen, and considerable cost accounting work. The usual charge for this service by a contractor on a percentage basis is 10 per cent and is in addition to the architect's fee.

New Receiving Building, Stockton State Hospital, Stockton, California.

RECOMMENDATIONS.

The State of California, through the services of this Division, is obtaining a high standard of excellence in all its buildings and mechanical installations from the standpoint of design, and figures show that this is being done economically.

There are three vital points, however, in connection with the work that must be constantly kept in mind in order that the construction work of the Division of Architecture may be properly carried forward. These three points are, first, that all construction projects should be carefully estimated and properly financed; second, that the state adopt a policy of permanent building construction at all institutions where same is considered advisable; and, third, that the Division itself be financed in such a manner as to as nearly as possible eliminate friction between the institutions and departments served and the Division.

Legislatures previous to 1921, in making appropriations for building construction, had followed the policy of extreme itemization as to particular work to be done and separate amounts for separate pieces of work. This policy produced an inelasticity in the expenditure of funds for building construction that was a distinct handicap in securing best results. The 1921 legislature, in a large degree, changed this policy by making lump sum appropriations for building construction at the various institutions. This change removed the difficulty, which in some cases created an impossible condition growing out of the necessity under the earlier policy of making each particular piece of work fit the special amount of money set aside for it at a time when full information necessary could not be available. The 1923 budget largely reverted to the practice of extreme itemization used prior to 1921. The Budget Board, in considering requests for appropriations for building construction to be presented to the 1925 legislature is now again, as we understand it, using the lump sum method as far as practicable. The results in the actual execution of the work provided for by the legislature should, and doubtless will, be satisfactory.

To a certain extent the policy, in connection with construction work in this state in the past, has been to keep first cost at a minimum by using inferior materials, principally in the shape of wood frame construction. Most of these structures are used to house inmates at the various institutions, and where this policy has been adopted it has been the somewhat natural outgrowth of the present necessity for rapid increase in accommodations. In these cases the real economy of good building is ignored, and, instead of a steady, permanent growth, the institutions affected have been developed in a way that will demand reconstruction within a comparatively few years.

When all the points in connection with the construction of a state institution are considered and carefully analyzed, it will be found that there is no saving effected in the long run by the use of wood frame construction.

The difference between a fire-resisting and a wood frame building is largely in the rough shell. It is necessary to use practically the same grade and amount of interior finish, doors, windows, floors, painting, hardware, heating, plumbing, electrical work, etc., in each type. The result is that the first cost of fire-resisting buildings is largely only

from 15 to 20 per cent greater than of the cheaper type, while its life is easily double that of a wood frame structure. Furthermore, the cost of upkeep of the noncombustible building is much less than the other, so that it is probable that if the total expenditure for first cost and upkeep of a wood frame building taken over a period of twenty years were compared with the first cost of a fire-resisting building, including its upkeep for twenty years, there would be practically no difference in total amount.

Fires are occurring more or less frequently in state structures and, if the policy of using wood frame construction for permanent buildings is not entirely abandoned, there is great danger of a rude awakening to the error in following such policy occasioned by a conflagration causing the loss of many thousands of dollars worth of property, or, worse than that, the loss of the lives of inmates unable to escape because of the inflammable nature of the structures.

The provision of a lump sum intended to cover all salary and support expense involved in the operation of the Division of Architecture, and based on the total amount of proposed budget provisions for the coming biennium for construciton work for all institutions and departments, would not in any way affect the amount of this expense and would make for increased efficiency and the elimination of friction. It would be best, however, not to change the present provisions of the Building Act covering this matter, so as to cover possible and probable unforeseen contingencies.

FINANCIAL STATEMENT, DEPARTMENT OF PUBLIC WORKS. DIVISION OF ARCHITECTURE.

Chapter and year	Name of job	Balance June 30, 1922 and appropriations	Expended	Balance June 30, 1924
	STATE AGRICULTURAL SOCIETY.			
	Agricultural Park.			
296–1921	Repairs, buildings and grounds	$17,285 19	$17 285 19	
591–1919	Improvements to grounds	11 60	11 60	
	Totals	$17,296 79	$17,296 79	
	California Polytechnic School.			
440–1921	Repairs	$36,254 22	$36,055 14	$199 08
315–1917	Barn—construction	3 017 22	3,017 22	
	Totals	$39,271 44	$39,072 36	$199 08
	Chico State Teachers College.			
121–1923	Permanent improvements and repairs	$10,000 00	$2,537 47	$7,462 53
559–1919	Trades school unit	355 98	355 98	
558–1919	Repairs to buildings	81 96	81 96	
	Totals	$10,437 94	$2 975 41	$7 462 53
	Fresno State Teachers College.			
121–1923	Repairs	$5 000 00	$2,212 95	$2 787 05
436–1919	Repairs	4 52	3 60	92
	Totals	$5,004 52	$2,216 55	$2,787 97
	Humboldt State Teachers College.			
565–1919	Completion of buildings	$46 33	$27 83	$18 50
	Preston School of Industry.			
121–1923	Permanent improvements	$9,000 00	$4,234 75	$4,765 25
121–1923	Repairs	10 000 00		10,000 00
121–1923	New equipment	2,000 00		2,000 00
907–1921	Repairs and equipment	127,338 36	115 109 99	12 228 37
400–1919	Repairs	7 594 75	7,541 14	53 61
	Totals	$155,933 11	$126,885 88	$29,047 23
	San Diego State Teachers College.			
121–1923	Repairs	$15,000 00	$14 924 66	$75 34
449–1921	Repairs, etc.	53,536 61	51,051 00	2,485 61
461–1919	Improvements to grounds, etc.	9 48	9 07	41
	Totals	$68,546 09	$65,984 73	$2,561 36
	San Francisco State Teachers College,			
121–1923	Repairs	$10,000 00	$6 276 05	$3,723 95
280–1921	Purchase of site and bullding	101 500 00	40,744 01	60,755 99
	Totals	$111,500 00	$47,020 06	$64,479 94
	San Jose State Teachers College.			
121–1923	Permanent improvements and repairs	$13,500 00	$1,514 56	$11,985 44
563–1921	Repairs and improvements	8,846 00	8,834 07	11 93
389–1921	Manual Arts Building	204,822 23	202,324 52	2,497 71
391–1919	Heating plant	73 83	73 11	72
476–1919	Repairs and improvements	45 15	45 00	15
Fund cont.	Service connections	3,500 00	3,494 34	5 66
	Totals	$230,787 21	$216,285 60	$14,501 61
	Santa Barbara State Teachers College.			
121–1923	Permanent improvements and repairs	$15,000 00	$4,700 03	$10,299 97
387–1921	Repairs, etc.	7,143 56	7,143 56	
	Totals	$22,143 56	$11,843 59	$10,299 97

Cottage for Patient Workers, Southern California State Hospital, Patton, California.

Financial Statement, Department of Public Works.
Division of Architecture—Continued.

Chapter and year	Name of job	Balance June 30, 1922 and appropriations	Expended	Balance June 30, 1924
	Ventura California School for Girls.			
121–1923	Permanent improvements	$300 00		$300 00
265–1921	Repairs and improvements	23,712 41	$19,670 42	4,041 99
266–1921	Water supply	10,900 79	2,217 71	8,683 08
388–1919	Construction of cottages	55,961 11		55,961 11
389–1919	Farm buildings	49 70		49 70
569–1919	Improvements to grounds	9 46		9 46
584–1919	Completion of a cottage unit	2,337 30	1,401 22	936 08
452–1919	Purchase and lay linoleum	1,044 80	1,044 80	
	Totals	$94 315 57	$24,334 15	$69,981 42
	Whittier State School.			
121–1923	Repairs	$10,000 00	$5,293 30	$4,706 70
121–1923	Permanent improvements	20,000 00		20,000 00
446–1921	Water supply	24,261 09	7,231 06	17,030 03
392–1921	Repairs, etc.	151,818 98	151,818 98	
	Totals	$206,080 07	$164,343 34	$41,736 73
	Industrial Farm for Women.			
254–1921	Additions and improvements	$23,567 17	$5,347 43	$18,219 74
165–1919	Building, repairs, etc.	25,168 17	25,168 17	
	Totals	$48,735 34	$30,515 60	$18,219 74
	California School for Deaf and Blind, Berkeley.			
121–1923	Repairs, etc.	$14,550 00	$8,735 00	$5,815 00
121–1923	Building construction	90,000 00	1,227 79	88,772 21
261–1921	Repairs, etc.	19,942 81	17,158 17	2,784 64
293–1917	Heating system	506 85	506 85	
	Totals	$124,999 66	$27,627 81	$97,371 85
	Industrial Home for Adult Blind.			
121–1923	Permanent improvements	$10,000 00	$9,671 46	$328 54
121–1923	New equipment	734 80	704 18	30 62
397–1921	Repairs, etc.	6,733 95	6,732 52	1 43
687–1921	Buildings	75,474 04	75,474 04	
446–1919	Repairs	3 80		3 80
	Totals	$92,946 59	$92,582 20	$364 39
	Sonoma State Home.			
121–1923	Permanent improvements	$109,500 00	$5,511 91	$103,988 09
564–1921	Repairs and improvements	91,427 15	90,901 78	525 37
317–1921	Quarters for employees	67,479 95	66,733 86	746 09
319–1921	Cottages	70,168 00	45,800 79	24,367 21
390–1921	School and assembly building	99,905 69	89,270 86	10,634 83
624–1919	Cottages	3 06		3 06
380–1919	Sewers and drains	5 31		5 31
432–1919	Water supply	37,863 40	21,190 87	16,672 53
353–1917	Commissary	50 40	50 40	
	Totals	$476,402 96	$319,460 47	$156,942 49
	Veterans' Home.			
121–1923	Permanent improvements	$36,000 00	$24,771 72	$11,228 28
Fund	Support plot plan	1,000 00	458 02	541 98
	Support painting building	6,500 00		6,500 00
679–1921	Power house	37,308 54	37,226 50	82 04
391–1921	Repairs, etc.	33,467 08	31,241 97	2,225 11
442–1919	Repairs, etc.	142 58	132 53	10 05
483–1917	Boilers	4,787 92	4,787 92	
	Totals	$119,206 12	$98,618 66	$20,587 46

Financial Statement, Department of Public Works.
Division of Architecture—Continued.

Chapter and year	Name of job	Balance June 30, 1922 and appropriations	Expended	Balance June 30, 1924
	Woman's Relief Corps Home.			
Emer. fund	Heating apparatus	$6,964 45	$6,964 45	.....
121-1923	Repairs	1,500 00	169 29	$1,330 71
	Totals	$8,464 45	$7,133 74	$1,330 71
	Agnews State Hospital.			
121-1923	Women's Industrial Building	$7,000 00	$109 28	$6,890 72
253-1921	Repairs, etc.	37,202 85	30,166 85	7,036 00
252-1921	Buildings and purchase of dairy herd	25,000 00	24,084 41	915 59
881-1921	Quarters for employees	100 000 00	97,747 10	2,252 90
568-1919	Cottage	1,742 77	570 63	1,172 14
402-1919	Heating system	28 49	.....	28 49
	Totals	$170,974 11	$152,678 27	$18,295 84
	Mendocino State Hospital.			
121-1923	New equipment	$13,900 00	$7,074 67	$6,825 33
121-1923	Permanent improvements	59,900 00	32,540 10	27,359 90
256-1921	Water supply	24,998 50	24,982 14	16 36
255-1921	Repairs, etc.	40,838 38	40,013 53	824 85
399-1921	Receiving building	149,949 41	8,282 59	141,666 82
404-1919	Sundry improvements	24 62	23 40	1 22
905-1921	Emergency Fund Res. 5—repairs to main building	105 66	104 15	1 51
443-1919	Improvements to heating system	7 97	.....	7 97
444-1919	Shelters	25 46	25 00	46
371-1917	Repairs	13 45	11 70	1 75
296-1917	Laundry and bakery	570 35	569 81	54
Cont. fund	Alterations, Wards 1 and 2	4,931 38	4,879 51	51 87
Cont. fund	Brick plant	8,034 11	8,022 03	12 08
Cont. fund	Plumbing and electrical work	2,600 00	2,600 00	.....
Cont. fund	Rewiring	1,110 00	1,052 77	57 23
	Totals	$307,009 29	$130,181 40	$176 827 89
	Napa State Hospital.			
121-1923	Permanent improvements	$55,460 00	$18,906 91	$36,553 09
318-1921	Removal and disposal of bodies	7,500 00	7,466 60	33 40
894-1921	Remodeling buildings, etc.	19,095 79	19,095 79	.....
447-1921	Repair and improvements	41,658 65	41,058 16	600 49
448-1921	Power house etc.	31,952 01	31,610 74	341 27
859-1921	Cottage for patients	97,593 16	71,675 35	25,917 81
565-1919	Quarters for employees	1,460 16	1,410 01	50 15
397-1919	Heating system	1 346 80	660 70	686 10
Cont. fund	Shop building	3 000 00	3 000 00	.....
Cont. fund	Improvements to Laundry	4 000 00	4 000 00	.....
Cont. fund	Steam line laterals	20 000 00	3 257 55	16 742 45
	Totals	$283 066 57	$202 141 81	$80 924 76
	Norwalk State Hospital.			
323-1921	Buildings and equipment	$414 804 06	$280 657 71	$134 146 35
274-1921	Building completion	284 74	284 74	.....
275-1921	Buildings	4 546 50	4 546 50	.....
588-1919	Officers quarters	45	.....	45
587-1919	Two cottages	9 995 22	9 993 12	2 10
586-1919	Improvements on farm	5 02	.....	5 02
585-1919	Water tower etc.	3 617 46	3 617 14	32
433-1919	Farm building completion	65 92	35 78	30 14
345-1917	Administration	2 764 99	2 764 99	.....
344-1917	Farm buildings	30 33	30 33	.....
Cont. fund	Telephone system	1 048 12	966 18	81 94
Emer. fund	Res. 13	4 700 00	4 405 67	294 33
	Totals	$441 862 81	$307 302 16	$134 560 65
	Pacific Colony Buildings.			
445-1921	Pacific Colony buildings	$119 996 58	.....	$119 996 58
562-1919	Pacific Colony buildings	1 709 72	.....	1 709 72
	Totals	$121 706 30	.....	$121 706 30

Financial Statement, Department of Public Works.
Division of Architecture—Continued.

Chapter and year	Name of job	Balance June 30, 1922 and appropriations	Expended	Balance June 30, 1924
	Southern California State Hospital.			
121–1923	Permanent improvements	$98 000 00	$47 504 82	$50 495 18
Emer. fund	Res. 23—New cottages	45 000 00	37 485 66	7 514 34
263–1921	Repairs and improvements	27 071 57	21 811 32	5 260 25
439–1921	Housing and training of patients	22 665 26	22,665 26	----------
440–1921	Heating plant	902 25	902 25	----------
	Totals	$193,639 08	$130,369 31	$63,269 77
	Stockton State Hospital.			
121–1923	Permanent improvements	$177,200 00	$62,183 60	$115,016 40
393–1921	Repairs, etc.	34,394 51	22 959 82	11,434 69
860–1921	Receiving and psychopathic building	150,000 00	148,999 93	1,000 07
601–1919	Cottage on farm	1 48	----------	1 48
398–1919	Sewer system	14,254 48	10 826 97	3 427 51
	Totals	$375,850 47	$244,970 32	$130,880 15
	Folsom State Prison.			
121–1923	Permanent improvements	$23,000 00	$17,806 21	$5,193 79
680–1921	Cottages for employees	3,388 10	3,273 01	115 09
394–1921	Repairs and improvements and extension of wall	16,360 18	15,371 86	988 32
396–1919	Electric construction	195 69	189 23	6 46
467–1919	Repairs	224 96	224 55	41
276–1917	School building	149 93	149 93	----------
	Totals	$43,318 86	$37 014 79	$6,304 07
	San Quentin State Prison.			
121–1923	Permanent improvements	$15,000 00	$29 62	$14,970 38
699–1921	Children's Hall	4,998 50	4,965 44	33 06
738–1921	Employees cottages	15,000 00	14,987 65	12 35
401–1919	Electrical installation	493 55	493 55	----------
233–1917	Rewiring	40 58	40 58	----------
285–1917	Farm buildings	4,948 32	4,948 32	----------
	Totals	$40,480 95	$25,465 16	$15 015 79
409–1921	State Capitol repairs	$5 225 66	$5,120 82	$104 84
Fund	San Francisco State Building	126,351 27	126,351 27	----------
618–1919	San Francisco State Building	211,407 13	211,347 12	60 01
6–1923	San Francisco State Building	205,900 00	148,910 93	56,989 07
Fund	Sacramento State Building	2,834,893 11	1,536,450 86	1,298,442 25
5–1923	State Printing Plant, completion	86,800 00	85,745 70	1,054 30
703–1921	State Printing Plant, completion	42,939 14	42,938 44	70
762–1917	State Printing Plant, completion	100,000 00	99,998 59	1 41
293–1921	State Nursery, Davis, buildings	1,099 83	966 94	132 89
387–1919	Marshall blacksmith shop	2 10	----------	2 10
311–1917	Fort Ross, repairs	287 13	287 13	----------
910–1921	Mission S. F. de Solano	972 35	972 35	----------
409–1923	Mission S. F. de Solano	750 00	631 29	118 71
416–1921	California Redwood Park, repairs	12,048 40	11,954 29	94 11
871–1921	Humboldt Redwood Park, building	6,176 19	6,092 85	83 34
121–1923	State Mining Bureau, alteration to offices	2 300 00	1,928 79	371 21
Fund	Compensation Insurance Office, alterations	3,000 00	1 908 04	1,091 96
905–1921	Contingent expenses	22,882 10	22,875 95	6 15
905–1921	Printing	2,577 08	2,535 47	41 61
121–1923	Support	10,175 00	9 529 47	645 53
121–1923	Salaries	15,828 00	15,597 63	230 37
905–1921	Salaries	69,889 90	69,888 92	98
	Totals	$3 761 504 39	$2,402 032 85	$1,359,471 54
	G and totals	$7,571,530 58	$4 926,380 84	$2,645,149 74

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FIFTH REPORT

OF

STATE PURCHASING AGENT

OF

STATE OF CALIFORNIA

December 15, 1924

CALIFORNIA STATE PRINTING OFFICE
JOHN E. KING, State Printer
SACRAMENTO, 1925

35702

REPORT OF STATE PURCHASING AGENT.

Hon. G. G. Radcliff,
Director of Purchase and Custody.

I submit herewith report of the work of the State Purchasing Agent's office and stores, for the seventy-fourth and seventy-fifth fiscal years. The matters treated in this report will be considered in the following order:

First—Total purchases for all institutions and departments, showing the value of purchases for each of the more important institutions and departments in each of the various lines or classifications of materials, and the grand total of all purchases made by this office. Under this head is also shown the classification of the purchases for the State Harbor Commission.

Second—Cost of administration of the Purchasing Agent's office; also cost of branches in San Francisco and Los Angeles, and cost of operating stores, showing percentage of cost to business transacted.

Third—Report of the business of the stores division, and statement of status of revolving fund as of June 30, 1924.

Fourth—Manner of making tests of materials and tests made for the biennium, with cost of same.

Fifth—A comparison of prices paid by the Purchasing Agent for staple lines of merchandise, giving the average unit price paid each quarter as compared to the jobbing or wholesale quotation prices each quarter for the same lines and quantities.

Sixth—Some examples of special savings accomplished by the Purchasing Agent's organization.

Seventh—Observations and general conditions, and suggestions for betterment in conduct of the state's business.

TOTAL MONEY VALUE OF ALL LINES OF MERCHANDISE PURCHASED FOR ALL DEPARTMENTS AND INSTITUTIONS.

Table I.—In this table the various materials purchased are grouped according to the dealers' lines as far as possible. The value of the purchases in each line of commodities for each of the institutions and larger departments is arranged in column order. At the foot of each column is shown the total purchases for the institution or department. The total value in each line of commodities for all institutions is shown in the further right-hand column. The footing at the bottom of the last column shows the total value in all lines for all departments and institutions.

TABLE

Total Value of All Lines

Commodity	Agnews State Hospital	Mendocino State Hospital	Napa State Hospital
1. Groceries	$52,063 59	$31,146 18	$52,702 07
2. Produce and dried fruit	31,777 67	17,631 99	20,322 05
3. Meat and provisions	114,211 87	68,977 10	180,401 45
4. Flour and cereals	27,058 77	18,869 46	43,592 11
4a. Milk	47,409 00		
5. Grains and feed	15,543 16	15,432 77	31,056 40
6. Fresh fish	8,539 00	4,325 00	11,225 00
7. Tobacco	8,254 31	6,336 33	7,752 97
8. Soap and laundry supplies	7,610 93	4,700 14	6,451 17
9. Broom materials	78 40		1,766 52
10. Coal and wood	303 75	1,328 00	2,138 50
11. Clothing, hats and dry goods	41,369 65	29,683 48	63,697 56
11a. Clothing and shoes (San Quentin manufactured)	9,511 00	7,567 75	
11b. Hose, belting, packing and miscellaneous rubber goods	1,500 16	1,106 16	2,229 94
12. Leather and shoe findings	1,262 69	1,954 87	5,978 84
13. Crockery and glassware	4,519 40	7,903 42	4,378 45
13a. Kitchen equipment	2,742 44	970 43	5,350 32
14. Furniture and carpets	16,127 08	2,388 35	14,313 45
15. Stationery, school janitor, office supplies and equipment	6,190 43	3,391 16	2,894 43
16. Drugs, chemicals and hospital supplies	7,525 18	4,846 85	12,021 06
17. Paints, oils, etc.	6,636 49	3,094 92	9,468 26
18. Oils, burning and lubricating	56,966 57	35,579 99	55,169 37
19. Hardware	4,453 21	3,538 10	10,648 20
20. Plumbing supplies	3,561 67	5,353 02	10,557 37
21. Electrical supplies	6,092 16	2,499 33	6,884 14
22. Alcohol and spirits	228 04	60 33	435 72
23. Dental supplies	227 84	49 80	220 79
24. Photographic supplies	5,006 71	366 41	627 89
25. Sporting goods	104 57		
26. Printing supplies			
27. Lithographing, embossing, etc.	137 50		
28. Livestock	255 00	1,351 05	1,179 89
29. Automobiles and trucks	442 00	3,443 86	1,485 00
30. Auto accessories	76 63	74 70	54 37
31. Auto tires and tubes	160 78	347 50	656 05
32. Nursery stock, seeds, etc.	999 93	1,889 22	2,300 35
33. Musical instruments, etc.	1,025 13		
34. Shoes (other than San Quentin manufactured)	677 38	1,117 80	435 50
35. Machinery and equipment	1,246 40	3,137 19	16,820 55
36. Farm implements	2,384 95	707 53	3,679 33
37. Building material	3,629 94	880 28	3,578 60
38. Lumber	3,569 01	7,053 93	18,808 66
39. Cement	187 25	11 70	2,069 60
40. License plates, badges, etc.	2 60		
41. Miscellaneous	6,705 80	2,364 52	5,500 23
42. Jute			
43. Blanket and confirmatory orders	6,560 00	3,950 00	9,689 95
Totals	$514,936 04	$305,430 62	$628,552 11

I.

of Merchandise Purchased.

Norwalk State Hospital	Stockton State Hospital	Southern Cal. State Hospital	Industrial Home for Adult Blind	Sonoma State Home	Veterans' Home of California	San Quentin Prison	Folsom State Prison
$20,651 70	$68,353 44	$53,655 03	$4,873 12	$51,801 64	$28,506 92	$83,241 96	$32,067 93
8,630 56	22,651 27	29,365 68	1,897 90	22,240 85	10,380 56	52,434 20	30,929 88
39,606 68	131,992 02	142,242 99	14,853 26	96,658 57	51,853 91	181,956 57	78,259 25
13,699 59	43,069 48	36,078 43	1,790 60	28,508 66	8,082 23	58,907 46	29,356 10
1,800 00			4,102 00			626 50	
20,593 24	28,679 03	36,630 27		45,643 21	25,958 79	21,676 46	21,446 40
610 00	7,696 00	4,040 00	890 00	5,430 00	1,397 50	6,750 00	60 00
2,525 56	13,001 42	7,620 13		907 26	926 07	24,034 94	12,249 02
4,535 92	6,862 55	7,304 13	622 65	6,744 89	2,608 07	6,950 14	3,416 48
383 72	42 50	298 30	60,567 11	8 25		320 50	
	8,218 75	43 40	75 40	4,922 90	2,023 95	13,037 15	6,367 00
22,954 72	51,965 72	48,162 98	1,570 74	53,628 63	27,893 23	159,013 13	49,917 62
265 00	7,833 50			3,413 75	103 25		
653 71	2,260 31	1,544 32	72 62	1,916 87	768 50	7,621 10	713 63
372 71	4,238 91	6,511 77		2,584 80	335 47	46,475 82	14,010 18
4,965 01	7,114 74	12,043 03	266 99	9,051 66	3,204 15	1,819 00	2,738 32
2,682 34	1,857 10	1,485 00	19 14	3,952 30	1,515 07	2,055 22	992 70
10,399 75	12,974 36	7,176 07	1,171 38	18 351 75	2,324 58	1,849 22	5,016 53
3,540 60	6,103 49	3,174 77	352 32	4,540 51	2,791 52	23,458 23	7,520 86
4,363 08	10,241 46	6,449 54	475 29	10,246 79	3,743 76	9,579 11	7,510 68
2,787 13	6,664 59	8,330 01	681 70	12,218 08	1,303 82	17,263 84	3,335 59
2,896 45	45,794 64	37,093 15	4,037 61	36,008 46	39,442 27	42,568 30	17,168 15
3,798 68	10,027 05	9,201 02	612 40	10,633 97	2,698 27	56,725 19	14,287 27
2,245 75	7,260 27	8,696 76	296 77	6,524 47	1,172 95	9,930 50	8,216 59
1,976 95	3,998 01	3,449 28	129 82	3,453 39	2,469 06	6,778 45	4,790 57
47 17	33 84	269 89		222 19	56 69	36 21	50 62
22 68	953 52	408 25		77 46	623 95	2,329 29	3,599 15
	194 49	2,056 35		180 37	281 90	4,519 19	1,928 86
30 80				1,641 74			560 00
45 00				43 88		1,100 69	676 26
						508 00	67 90
229 20	2,185 00	1,430 00		1,648 00	2,037 90	1,245 00	2,514 00
632 05	200 00	1,200 00			1,683 81	509 22	1,240 00
73 67	856 26	1,050 33		566 70	8 24	140 87	72 15
406 24	671 97	673 38	146 35	730 31	666 20	868 98	558 85
2,366 17	7,642 83	3,612 00		2,200 43	1,390 72	763 43	1,822 33
				161 99		329 01	608 25
1,476 40	450 00			4,404 18	1,375 00		8 90
174 85	10,962 13	6,907 65		3,380 98	1,061 10	26,846 28	2,087 58
1,945 81	3,566 87	2,411 16		888 09	51 27	14 55	521 08
2,224 40	8,045 29	1,682 02		1,465 43	117 58	4,826 31	1,121 58
5,031 43	14,105 24	8,334 26		13,168 54	3,520 75	90,207 94	7,133 96
654 70	3,532 69	1,668 70		2,733 45	229 45	2,660 60	3,461 50
11,124 51	6,536 63	5,527 78	677 90	4,703 22	1,870 29	11,397 47	5,466 72
						413,031 30	
8,750 00	7,939 54	10,770 00	7,610 00	6,213 50	5,400 00	4,200 00	8,118 51
$212,173 93	$576,776 91	$518,597 83	$107,793 07	$483,822 12	$241,878 75	$1,400,607 33	$391,988 95

TABLE

Total Value of all Lines

Commodity	Cal. School for Deaf and Blind	California School for Girls	Preston School of Industry
1. Groceries	$9,356 15	$8,265 91	$21,808 28
2. Produce and dried fruit	2,778 81	2,103 63	10,670 51
3. Meat and provisions	15,682 09	22,156 58	33,723 72
4. Flour and cereals	2,659 65	2,654 61	13,039 95
4a. Milk	7,919 60		
5. Grains and feed	6,476 34	6,766 18	15,422 53
6. Fresh fish	603 50	826 25	543 00
7. Tobacco			
8. Soap and laundry supplies	1,958 68	1,831 92	2,961 70
9. Broom materials	265 76		9 70
10. Coal and wood	658 50		1,374 00
11. Clothing, hats and dry goods	3,931 84	8,806 29	33,767 03
11a. Clothing and shoes (San Quentin manufactured)	29 75	15 50	17 00
11b. Hose, belting, packing and miscellaneous rubber goods	136 32	163 81	1,134 29
12. Leather and shoe findings	1,153 80	67 33	9,106 36
13. Crockery and glassware	2,049 95	1,077 58	2,191 64
13a. Kitchen equipment	378 11	135 76	375 73
14. Furniture and carpets	1,878 91	1,364 10	2,483 48
15. Stationery, school janitor, office supplies and equipment	6,526 36	2,510 44	3,638 75
16. Drugs, chemicals and hospital supplies	654 24	1,607 92	2,990 43
17. Paints, oils, etc.	2,165 55	645 24	2 150 47
18. Oils, burning and lubricating	10,921 67	1,486 58	23,512 63
19. Hardware	943 37	426 01	6,488 47
20. Plumbing supplies	2,271 38	221 59	3,374 83
21. Electrical supplies	669 07	1,130 47	3,100 46
22. Alcohol and spirits		6 50	68 08
23. Dental supplies	8 00	12 17	255 24
24. Photographic supplies	50		344 52
25. Sporting goods	622 21	86 30	1,122 56
26. Printing supplies	4,067 10		4,114 34
27. Lithographing, embossing, etc.			
28. Livestock	950 00	230 00	200 00
29. Automobiles and trucks		604 95	850 34
30. Auto accessories	67 09	51 11	2,177 48
31. Auto tires and tubes	228 14	339 12	1,852 02
32. Nursery stock, seeds, etc.	175 96	1,118 44	1,366 93
33. Musical instruments, etc.	922 79	50 00	1,526 01
34. Shoes (other than San Quentin manufactured)	78 35	2,092 34	410 00
35. Machinery and equipment	1,181 19	3 72	1,561 54
36. Farm implements	24 10	17 78	2,875 63
37. Building material	132 36		701 00
38. Lumber	2,766 07	814 57	9,717 02
39. Cement	188 20		531 20
40 License plates, badges, etc.			
41. Miscellaneous	405 88	750 24	2,805 51
42. Jute			
43. Blanket and confirmatory orders	6,600 00	2,490 00	7,297 40
Totals	$100,487 34	$72,930 94	$233,661 78
Total purchases for Harbor Commission, see Table II for classification			
Grand Total			

I—Continued.

of Merchandise Purchased.

Whittier State School	Pacific Colony	State Printing Dept.	Division Motor Vehicles	Dept. of Public Works	Napa State Farm	Sundry departments, including State Teachers College	Totals
$15,422 20	$441 96			$3 50	$730 06	$6,422 74	$541,514 38
8,850 48	121 76					881 99	273,669 79
21,000 29	627 00				79 80	33,648 08	1,227,931 23
6,976 67	91 61	$142 00			36 00	1,197 82	335,811 20
						3,925 00	65,782 10
22,403 15	514 00				935 50	9,511 52	324,688 95
1,788 00	30 00					7,179 50	61,932 75
							83,608 01
3,043 09	34 76	208 50	$73 29		18 19	1,430 74	69,367 94
21 00						82 70	63,844 46
336 00						4,935 40	45,762 70
17,676 01	205 67	8,383 92	27 46	343 91	31 75	6,077 96	629,109 30
		5 50				1,091 65	29,853 65
368 59		194 89		1,338 51	99 55	1,981 27	25,804 55
4,436 40	3 65	76 14				215 54	98,785 28
2,717 81	33 66	106 50	3 50	392 85		2,062 59	68,640 25
1,578 05				534 25	120 40	2,946 81	29 691 17
3,482 15		1,654 74	406 99		99 25	41,882 87	145,345 01
3,308 94	29 77	2,659 00	19,051 25		101 49	243,450 14	345,234 46
1,142 28	15 99	3 25	74 50	1,705 21		49,070 60	134,267 22
3,110 17	63 21	2,454 84	27 18	19,622 90		5,540 85	107,564 84
5,134 17	1,164 06	1,216 33	4,906 61	658 59	16 50	41,830 42	463,572 52
3,326 81	23 15	743 59	249 75	94,005 23	553 51	11,110 86	244,494 11
1,970 51	21 97			169,613 44	127 39	4,116 89	245 544 12
1,118 75		10,323 92	1,597 91	62,599 21	592 53	15,843 21	139,496 69
6 50						143 78	1,665 56
20 55				560 00		175 58	9,544 27
58 88						4,203 73	19,769 80
1,490 52						3,071 24	8,729 94
2,399 30		565,895 36	47 50			7,928 00	586,317 43
			4,622 50			49,877 70	55,213 60
200 00	175 00					2,057 00	17,887 04
860 00		1,560 00	2,577 90	5,094 40	720 00	82,126 31	105,229 84
281 69			200 75	277 68	7 20	2,748 29	8,785 21
684 09	36 58		1,632 70	2,514 81	209 94	17,094 53	30,478 54
1,724 56	82 50				349 40	3,794 14	33,599 34
						1,817 87	6 441 05
						430 80	12,956 65
1,053 82		669 65		8 895 35	828 59	5,206 34	92,024 91
3,008 64	6 75			6,325 44	1,552 85	3,543 26	33,525 09
12 00		256 00	135 00	90,982 50	122 39	4,407 87	124,320 55
5,099 34	25 00	4,181 46	2,794 08	199,242 27	1,176 64	18,605 88	415,356 05
43 65				66,892 58	494 40	453 21	85,812 88
			325,917 57			7,185 59	333,105 76
1,963 48	327 38	2,637 72	1,898 90	21,859 59	584 34	27,053 35	122,161 46
							413,031 30
6,852 48	150 00	27,981 17	7,187 83	40,275 63	10,500 00	275,307 50	463,843 51
$154,971 02	$4,225 43	$631,354 48	$373,433 17	$793,737 85	$20,087 67	$1,013,669 12	$8,781,116 46
							1,164,125 53
							$9,945,241 99

Table II.—In this table is given the commodity purchases and the total of the Harbor Commission branch. The total represents the purchases for use on the Harbor and Belt Railroad, handled by Arthur J. Burton as an assistant of the main office.

In addition to the purchases shown in this commodity table, Mr. Burton's office is used daily for pick-up service and emergency calls, the total of which is included in the general office Table I.

TABLE II.

Harbor Commission Branch.

Automobile repairs and accessories	$4,317 33
Automobile tires and tubes	2,063 56
Cement	127,620 94
Distillate, gasoline and kerosene	6,738 06
Lubricating oils	8,993 42
Fuel oil	154,930 44
Paints, oils and glass	21,514 24
Piling	257,955 89
Lumber	230,395 09
Railroad equipment	101,106 58
Lamps and globes	6,740 28
Rock, sand and gravel	19,186 38
Steel cable	9,875 23
Rope, manila and cotton	8,497 69
Machinery and equipment	21,220 20
Automobiles and trucks	11,009 41
Electrical supplies	26,897 74
Plumbing supplies	7,708 99
Iron and steel, heavy	41,319 76
General hardware	50,251 29
Miscellaneous	45,783 01
Total	$1,164,125 53

The following is the materials handled through the stores division for the Board of State Harbor Commissioners:

July 1, 1922, to July 1, 1923	$408,463 07
July 1, 1923, to July 1, 1924	414,321 86
Total	$822,784 93

The handling of all salvage for the State Harbor Commission is under the supervision of the State Purchasing Department and the amount sold is as follows:

Old lumber sold July 1, 1922, to July 1, 1923	$837 77
Old lumber sold July 1, 1923, to July 1, 1924	1,924 17
Miscellaneous junk sold July 1, 1922, to July 1, 1923	7,065 52
Miscellaneous junk sold July 1, 1923, to July 1, 1924	4,519 41
Total junk sold July 1, 1922, to July 1, 1924	14,346 87

On account of the low price of salvage we have let the junk accumulate and there is approximately $1,500 to $2,000 worth of junk to be disposed of as soon as the market strengthens.

Under our present plan of having all materials on the harbor front, under direct supervision of Mr. Burton, and the disposition of same reportable to him, very little, if any, material is lost, and it is due to this supervision entirely that the amount shown above as salvaged from junk materials can be shown.

In the foregoing, you will note, first, the total purchases made by the Harbor Commission; second, the value of the materials distributed

from the Harbor Commission's stock in stores to the harbor activities (the distribution of materials to the other institutions and departments of state are shown in our general report of stores); third, the value of surplus material and junk disposed of by the Harbor Commission branch.

Also, I am glad to make note in this report of the following special instances of savings made by Mr. Arthur Burton mentioned in his report to me. These are only a few instances given to show how the purchaser can, by his training and experience, accomplish savings and economies every business day of the year.

The following will show a saving on a few items of lumber (mill shipment):

	Market price	*Purchased at*	
May 22, 1923—80,533 feet	$3,040 12	$2,577 06	
July 24, 1923—80,133 feet	3,024 32	2,323 86	
April 11, 1924—82,667 feet	2,604 01	2,054 27	
May 7, 1924—80,740 feet	2,554 12	2,222 65	
Totals	$11,222 57	$9,177 84	
Total saving			$2,044 73

On some special machine work we obtained bids from concerns handling this special work for various industries here. The bids were $190.38, $200.40 and $212.92. A plant had just installed new machinery and we asked them to make a bid on this same job and their bid was $48. We sent an inspector to their plant and they completed the job for $48, rendering a first class job at a saving of 142 38

This department has been buying the first grade manilla rope at a price of 1½¢ per lb. under the market price. The total purchases of various sizes of rope from July 1, 1922, to July 1, 1924, 55,840 lbs., which shows saving of 837 60

At times, when machinery is requisitioned, we find by shopping around we can purchase machinery which has had little or no use at a great saving. As an instance, one of the departments desired a special machine. The market price was $600 for a new machine. We purchased one as good as new for $200, showing a saving on this transaction of 400 00

By keeping track of all materials which are turned in to be sold, we have an opportunity at times to trade in old articles to apply on the purchase price of the new ones. As an instance, we had previously purchased two foam extinguishers for the oil plant at $300 each. After same had served their purpose for several years and the oil plant having been abandoned, we traded them in on two new extinguishers of the acid type for $410, thus having the new extinguishers cost $35 each instead of $240 each 410 00

Table III.—This table gives the value of purchases made by the Los Angeles office showing the various commodities which go to make up these totals. The amount of purchases made entirely through the Los Angeles office can be very materially increased when we can secure the cooperation of the jobbers and manufacturers in Los Angeles and vicinity more thoroughly. These figures are included in the quantities listed under Table I.

TABLE III.

Los Angeles Branch.

Automobiles and automobile equipment	$10,942 16
Lumber and building material	121,739 98
Drugs, chemicals, hospital equipment and supplies	3,281 14
Farm machinery, miscellaneous farm supplies	17,862 31
Fuel and feed	25,402 83
Hardware, plumbing and electrical material	27,231 10
Mechanical equipment, tools, etc.	9,680 11
Leather goods, textiles and miscellaneous institutional supplies	26,934 78
Furniture, office equipment and supplies	21,724 64
Subsistence	34,904 70
Blanket authorization purchases	5,313 57
Total	$305,017 32

Table IV.—The cost of purchasing this vast quantity of material shown in the foregoing tables is set forth in Table IV. Bear in mind that I have separated the cost of purchasing from the cost of stores and distribution, and Table IV gives only the cost of purchasing. The cost of stores and distribution is shown in next table.

TABLE IV.

Cost of the Function of Purchasing.

Main office—		
Printing		$2,570 40
Salaries		68,585 44
Fixtures (P. & E.)		473 66
Supplies		1,425 08
Postage		5,928 00
Traveling expenses		1,863 95
Telephone and telegraph		3,167 87
Auto expense, including purchase of new auto		2,622 97
Testing charges, laboratory, Highway Commission, Sacramento		1,138 75
Testing charges, Pure Food and Drug Laboratory, Berkeley		320 00
Miscellaneous		620 27
Harbor Commission Branch (main office)—		
Salaries		9,925 00
Los Angeles Branch—		
Salaries		8,336 24
		$106,977 63
Total amount of purchases, Sacramento office	$8,781,116 46	
Total amount of purchases by Harbor Commission	1,164,125 53	
Total amount of purchases		$9,945,241 99
Percentage of cost of operating		1.076 per cent

Table V.—In this table is shown the total business of the stores in Sacramento, San Francisco, and supply store in Los Angeles, operated by our revolving fund for the two years, giving the business done in each month of the biennium, the total business for the period and the cost of operation of the stores and distribution.

I would like to call your particular attention, in passing, to the percentage of cost of operation of both the function of purchasing and of stores and distribution based upon the total business transacted:

The percentage of cost of purchasing is $1\frac{76}{1000}$ per cent.

The percentage of cost of stores is $5\frac{9}{100}$ per cent.

For economy of operation I think I am safe in making the statement that there are few, if any, private enterprises that can show as good record.

TABLE V.

Sales, Stores Division, July 1, 1922, to June 30, 1924.

1922		1923	
July	$16,602 02	July	$30,581 01
August	14,266 81	August	17,312 90
September	22,579 06	September	26,370 90
October	16,411 56	October	24,864 91
November	22,289 05	November	18,683 52
December	37,713 45	December	34,383 61
1923		**1924**	
January	$39,556 30	January	$38,661 80
February	7,956 39	February	12,079 24
March	32,115 06	March	36,653 34
April	31,171 02	April	18,370 68
May	10,318 73	May	15,137 01
June	44,084 55	June	31,087 41

Total Purchases Through Revolving Fund.

July 1, 1922, to June 30, 1923	$295,064 00
July 1, 1923, to June 30, 1924	304,186 33
	$599,250 33

Cost of Operating Stores at Sacramento and San Francisco.

Salaries, Sacramento stores	$10,415 97
Salaries, San Francisco stores	11,975 00
Freight, drayage and express, both stores	7,261 91
Material and supplies, both stores	860 76
Total	$30,513 64
Total amount of business done by stores division	$599,250 33
Percentage of cost of operating stores	5.09 per cent

Table VI.—In Table VI is given the financial status of the $200,000 revolving fund, as of June 30th, the end of the last fiscal year.

TABLE VI.

Statement of Status of the Revolving Fund and Related Accounts as of June 30, 1924.

Assets.

Balance in revolving fund, chapter 462, 1919, in the state treasury		$121,962 34
Cash revolving fund (checking account)		5,000 00
Accounts receivable		36,089 22
Inventory:		
Sacramento—		
Stationery and office supplies	$28,172 07	
Accounting department forms	4,708 73	
San Francisco—		
Stationery and office supplies	3,171 69	
Dry goods and miscellaneous stock	21,620 19	
Los Angeles—		
Stationery and office supplies	1,454 31	59,126 99
Total assets		$222,178 55

Accountability.

Accounts payable		$312 50
Appropriated funds		208,710 50
Revolving fund (chapter 462, Statutes 1919)	$200,000 00	
Support appropriation (chapter 421, Statutes 1917) (portion expended for purchase of supplies)	8,710 50	
Inventory May 1, 1916, at creation of the Purchasing Department		4,014 65
Increase in operating assets		9,140 90
Total accountability		$222,178 55

TESTING MATERIALS.

The present method of having all tests made by the laboratory connected with the Highway Commission, who have a complete and well equipped laboratory, is highly satisfactory and more economical than the separated laboratories; all tests made on account of a purchase being paid to the highway laboratory by the Purchasing Department on the cost plus overhead basis, the samples to be tested being sent by the various institutions to the laboratory through the Purchasing Agent. This prevents much useless duplicating of tests and very materially reduces the total number of tests made, at the same time giving ample check as to the material received.

Please note comparison of costs of tests made in seventy-second and seventy-third fiscal years, for all institutions, with the total number of tests made in the seventy-fourth and seventy-fifth fiscal years:

From July 1, 1920, to September 1, 1921, a period of 14 months, 1451 samples were tested at a total cost of $6,650.47.

From July 1, 1923, to July 1, 1924, 225 samples were tested at a total cost of $1,138.75.

Cost per test on old plan, $5.13 each.

Cost per test on new plan, 5.06 each.

You will note that the cost per test is very nearly equal under each plan, but a very considerable saving is made in the number of tests required.

The above does not include the tests on foods, which require analytical test, as these are sent to the Pure Food and Drug Laboratory at Berkeley at a total cost to this office of $320 for the biennium.

COMPARISON OF PRICES PAID WITH MARKETS.

Comparison of prices paid by the purchasing agent on some staple commodities, with the quoted jobbing price on the same kind and quality of merchandise at time of purchase, will give some idea as to whether the Purchasing Agent is securing an advantageous price as compared to the prices at which the wholesalers sell to the retail merchants. Our purchases for the most part are made every three months for the quarter's supply, hence these comparisons are shown quarterly. Note the difference between the total of market prices shown by footing of the first column under each quarter and the total of unit price paid by the state, shown by footing of second column under each quarter.

This comparison also gives you an idea of the fluctuation on these standard commodities during the two years. You will note that the markets have been very steady, showing that the prices for the past two years have been normal, and denoting that the business of the country has become entirely normal again.

TABLE NO. VII.

	Unit	July, August and September, 1922		October, November and December, 1922		January, February and March, 1923		April, May and June, 1923		July, August and September, 1923		October, November and December, 1923		January, February and March, 1924		April, May and June, 1924	
		Average market price f. o. b. shipping point	Average purchase price f. o. b. shipping point	Average market price f. o. b. shipping point	Average purchase price f. o. b. shipping point	Average market price f. o. b. shipping point	Average purchase price f. o. b. shipping point	Average market price f. o. b. shipping point	Average purchase price f. o. b. shipping point	Average market price f. o. b. shipping point	Average purchase price f. o. b. shipping point	Average market price f. o. b. shipping point	Average purchase price f. o. b. shipping point	Average market price f. o. b. shipping point	Average purchase price f. o. b. shipping point	Average market price f. o. b. shipping point	Average purchase price f. o. b. shipping point
Beef, fresh steer	lb.	$0.145	$0.11	$0.15	$0.1255	$0.145	$0.1235	$0.135	$0.1145	$0.14	$0.1113	$0.15	$0.123	$0.17	$0.141	$0.17	$0.1395
Ham	lb.	.35	326	.27	2485	.27	.2375	.27	.2175	28	.2135	.29	.2185	.27	215	.26	2024
Bacon	lb.	34	2556	.365	2385	.335	2385	.325	.2325	.325	.2185	.325	.2185	.28	19	.275	177
Lard compound	lb.	14	1075	14	1075	145	.114	.15	.113	.145	.113	.16	.113	.155	119	155	.110
Rice	lb.	0585	042	.051	049	048	.045	.05	.043	.052	0412	.057	0548	0565	0507	05675	.048
Salad oil	gal.	1 11	1 00	1 20	94	1 25	.87	1.30	.95	1 30	1 03	1 40	1 04	1 26	1.14	1 26	1 05
Sugar, D. G.	lb.	068	0575	074	.063	.074	.07	.0945	.091	.085	08	.092	.0787	0875	085	085	0828
Pasta (macaroni, etc.)	lb.	08	054	08	047	.08	046	.08	.0428	.075	04	.075	0385	.075	0415	.08	040
Coffee, green	lb.	.185	1685	19	171	.19	1725	.19	.18	.175	1648	.185	.1725	.21	1825	.26	24
Potatoes	lb.	021	017	0165	0085	0115	0075	.019	.0065	.02	014	025	0138	024	0147	0275	0205
Beans, pink	lb.	06	0583	06	.055	065	061	.06	.055	0535	05	.0555	0525	0485	0459	05	0448
Prunes	lb.	11775	092	115	085	.125	08	.12	.0835	.09	0774	085	066	.075	058	07	0575
Apples, evaporated	lb.	15	125	115	088	.12	0885	.09	08	.075	0615	095	0764	.145	09875	15	13
Rolled oats	lb.	047	0355	05	04	053	0425	053	.0379	047	0377	05	0375	05	0357	05	0378
Flour, bakers'	bbl.	6 05	6 00	7 00	5.15	7 00	5 70	7.60	6.00	7 00	5 35	7.00	5 25	6 70	5 25	7 30	5 20
Barley, whole	lb.	0145	013	017	0128	0185	0158	.02	.016	.016	01325	018	0167	019	016	.02	017
Barley, rolled	lb.	0145	013	017	0123	0185	0148	.019	0155	016	01325	018	0157	019	0165	02	0175
Millrun	lb.	0175	0155	0185	0143	019	0168	.02	.015	0195	016	017	0137	0175	014	018	0145
Paid totals			$8 50		$7.46		$7.94		$8 29		$7 65		$7.60		$7.71		$7 65
Market totals		$10 14		$10.20		$10.84		$10 87		$10 16		$10.36		$9 95		$10 65	

TABLE NO. VIII.

	Unit	July, 1922		October, 1922		January, 1923		April, 1923		July, 1923		October, 1923		January, 1924		April, 1924	
		Market	Paid	Market	Paid	Market	Paid	Market	Paid	Market	Paid	Market	Paid	Market	Paid	Market	Paid
Cottonade, 8 oz.	yd.	$0.24	$0.21½	$0.25	$0.22⅝	$0.28½	$0.25	$0.31	$0.27½	$0.28½	$0.25	$0.31	$0.27¾	$0.32	$0.284	$0.32½	$0.30⅜
Blue denim, 8 oz.	yd.	.22½	1935	.24	.21	.28½	.25½	.28½	.2474	.28½	.2474	31	26¾	.31	28	.32	.2724
Canton flannel, 7 oz., unbleached	yd.	.23¼	1845	24	.20	.23¾	.21¾	.27½	.23½	.28½	.26⅛	.28	.24¼	.28	259	.29½	.2649
Gingham, 27-inch utility	yd.	.16½	.14½	.17	.14½	.17	.14½	.16½	.13	.17½	.13	.17½	13	.17½	.13	.17½	.13½
Hickory shirting	yd.	.18	.1587	.18	.16¾	.21	.18½	.22½	.1972	.22½	193	.22½	1881	.22½	.20⅛	.24½	.2071
Indian head, 4-4 unbleached	yd.	.14½	1245	.15⅞	14	.17½	.15½	.19	.17⅜	.19½	17	.18¾	.16½	.20	179	.20½	.18¾
Otis checks	yd.	.20½	.17½	.21½	.18¾	.22½	.198	235	.1923	.235	20	235	.18⅞	.23½	.20½	.24¾	.2195
Sprends, Paragon	each	1 85	1.60	1.85	1.60	1 85	1.55	2 15	1 72	2.16	1 77½	2 25	1 87	2 35	1 79	2 35	1 87½
Socks, No. 701, Rockford	doz.	1.60	1.40	1.70	1.59½	1 70	1.60½	2.00	1.64	2.00	1 72	2.00	1.70	2.10	1.78	2.10	1 87½
Ticking, 8 oz.	yd.	.27	.23½	.27½	.24¼	.30	.26¾	.32½	.29¼	.35	.26½	.29½	.259	.32½	.288	.33½	.29
Underwear, 11-lb. cotton rib	doz.	7 50	6.50	7.75	6 70	8.25	7.32	8.25	6.97	9.50	6.97	8 75	7.725	9.50	8.48	10.50	8 48
Pequot sheeting, 5-4 bleached	yd.	.30	.2764	.30	.2738	.315	.294	.33	.2781	.37	.32	.33	.29½	.33	.29½	.33	.3073
Paid totals			$11 21		$11 68		$12 43		$12.35		$12 50		$13 31		$14 17		$14 42
Market totals		$12 91		$13 32		$14 00		$14.74		$16 06		$15 34		$16.35		$17.43	
Heavy sole leather		$0 36	$0 34	$0 36	$0 34¾	$0 38	$0 36½	$0.39	$0 38	$0 38	$0 36½	$0 37	$0 34	$0.35	$0.31½	$0.36	$0.32½
Chrome tanned sides, 5 oz. (elkskin)		24	.20½	.24	23	.24	.23	24	.24	25	23	.25	.24	24	225	.239	.21
Chrome tanned bevsides		23	.20	23	21	24	22	26	.24	.23	22	23	20	24	21	23	22
Glazed kid, 1½ oz.		26	.20	.26	20	.26	.19½	.26	.20	.27	25	.28	25	.27	.26½	.26	25
Paid totals			$0.95		$0 98		$1 01		$1.06		$1 07		$1.03		$1 02		$1.01
Market totals		$0.99		$1 09		$1.12		$1.15		$1.13		$1.13		$1.10		$1.09	

TABLE NO. IX.

COMPARISON OF PRICES ON PAPER PURCHASES FOR STATE PRINTING DEPARTMENT AS TAKEN FROM PURCHASE ORDERS ON FILE.

July 1, 1922, to December 31, 1922.

	Date	Quantity	Market price	Unit	Our price
Bonds:					
Exchange	Dec.	825 lbs.	$0.39	lb.	$0.2795
English	Nov.	1,275 lbs.	.29	lb.	.2225
Columbian	Dec.	4,000 lbs.	.29	lb.	.1875
Optimo	Nov.	3,200 lbs.	.13	lb.	.1175
Book:					
S. and S. C. text book	Oct.	213,100 lbs.	.117	lb.	.0863
No. 1 M. F.	Sept.	80,000 lbs.	.11475	lb.	.0865
Cardboard:					
3-ply Admiral	July	5M sh.	5.51	C	3.94
110 Argonaut	Nov.	5M sh.	4.75	C	3.81
Envelopes:					
No. 65 Columbian clasp	July	10M	12.84	M	9.19
No. 75 Columbian clasp	Nov.	20M	14.25	M	10.41
No. 90 Columbian clasp	Sept.	15M	17.29	M	12.93
No. 6¾ No. 28 Manila	July	200M	1.59	M	1.19
No. 6¾ No. 1 wood 32					
Flat:					
Palo Alto	July	1.220 lbs.	.245	lb.	.184
Standard laid	Nov.	762 lbs.	.228	lb.	.192
Chemical	Aug.	1,278 lbs.	.1211	lb.	.099
Ledger:					
Reliance	Aug.	411 lbs.	.361	lb.	.296
Pacific	Nov.	22,507 lbs.	.2565	lb.	.207
News	Aug.	213,000 lbs.	.0665	lb.	.06

January 1, 1923, to June 30, 1923.

Bonds:					
Exchange	Apr.	1,000 lbs.	$0.3575	lb.	$0.2475
English	June	9,050 lbs.	.30	lb.	.214
Columbian					
Optimo	June	3,200 lbs.	.1375	lb.	.1125
Book:					
S. and S. C. text book	Apr.	238,215 lbs.	.117	lb.	.0896
No. 1 M. F.					
Cardboard:					
3-ply Admiral	May	10 M sh.	5.51	C	3.94
110 Argonaut	June	3 M sh.	4.75	C	3.35
Envelopes:					
No. 65 Columbian clasp	Apr.	25 M	12.99	M	9.72
No. 75 Columbian clasp	Feb.	10 M	14.25	M	10.59
No. 90 Columbian clasp	May	15 M	17.29	M	12.65
No. 6¾ No. 28 Manila					
No. 6¾ No. 1 wood 32	May	1,000 M	2.26	M	1.415
Flat:					
Palo Alto	Apr.	11,590 lbs.	.245	lb.	.19
Standard laid	Feb.	480 lbs.	.228	lb.	.175
Chemical					
Ledger:					
Reliance	June	640 lbs.	.342	lb.	.27
Pacific	May	456 lbs.	.2660	lb.	.216
News					

Market prices are the wholesale prices prevailing at the time of our purchase as taken from the wholesale paper dealers' catalogs, from which price has also been deducted all discounts applicable on account of quantity purchased. The market price shown is the lowest net wholesale price at which the paper was sold to the printing trade in the State of California.

TABLE NO. IX—Concluded.

COMPARISON OF PRICES ON PAPER PURCHASES FOR STATE PRINTING DEPARTMENT AS TAKEN FROM PURCHASE ORDERS ON FILE.

July 1, 1923, to December 31, 1923.

	Date	Quantity	Market price	Unit	Our price
Bonds:					
Exchange	Oct.	800 lbs.	$0.35	lb.	$0.2569
English	Nov.	1,275 lbs.	.29	lb.	.20
Columbian	Dec.	1,230 lbs.	.29	lb.	.179
Optimo	Nov.	1,600 lbs.	.1325	lb.	.112
Book:					
S. and S. C. text book	Dec.	268,500 lbs.	.108	lb.	.0893
No. 1 M. F.	Sept.	40,000 lbs.	.10575	lb.	.0912
Cardboard:					
3-ply Admiral	Nov.	5 M sh.	5.225	C	4.00
110 Argonaut	Aug.	13 M sh.	4.75	C	3.29
Envelopes:					
No. 65 Columbian clasp	Sept.	5 M	12.99	M	9.70
No. 75 Columbian clasp	Nov.	5 M	14.51	M	10.58
No. 90 Columbian clasp					
No. 6¾ No. 28 Manila	Oct.	100 M	1.56	M	1.19
No. 6¾ No. 1 wood 32	Oct.	100 M	2.26	M	1.24
Flat:					
Palo Alto	Oct.	525 lbs.	.245	lb.	.19
Standard laid					
Chemical	Oct.	13,750 lbs.	.1211	lb.	.0891
Ledger:					
Reliance	Sept.	680 lbs.	.342	lb.	.288
Pacific	Oct.	21,141 lbs.	.266	lb.	.20
News					

January 1, 1924, to June 30, 1924.

Bonds:					
Exchange					
English	June	4,800 lbs.	$0.29	lb.	$0.205
Columbian	Apr.	2,050 lbs.	.29	lb	.193
Optimo	Feb.	4,800 lbs.	.125	lb.	.1055
Book:					
S. and S. C. text book	Apr.	102,500 lbs.	.099	lb.	.0893
No. 1 M. F.	Apr.	80,000 lbs.	.10575	lb.	.0842
Cardboard:					
3-ply Admiral	May	5 M sh.	4.89	C	4.00
110 Argonaut					
Envelopes:					
No. 65 Columbian clasp	Mar.	5 M	12.99	M	8.24
No. 75 Columbian clasp	Mar.	15 M	14.51	M	9.18
No. 90 Columbian clasp	Mar.	25 M	17.29	M	10.94
No. 6¾ No. 28 Manila	Mar.	100 M	1.56	M	1.10
No. 6¾ No. 1 wood 32	Mar.	1,000 M	2.26	M	1.30
Flat:					
Palo Alto	Mar.	16,100 lbs.	.245	lb.	.17
Standard laid	Mar.	2,520 lbs.	.228	lb.	.1544
Chemical	Mar.	4,800 lbs.	.114	lb.	.0897
Ledger:					
Reliance	Mar.	1,280 lbs.	.342	lb.	.25
Pacific	Mar.	820 lbs.	.266	lb.	.197
News	Apr.	140,000 lbs.	.0556	lb.	.044

Market prices are the wholesale prices prevailing at the time of our purchase as taken from the wholesale paper dealers' catalogs, from which price has also been deducted all discounts applicable on account of quantity purchased. The market price shown is the lowest net wholesale price at which the paper was sold to the printing trade in the State of California.

STORES INCREASE.

During the past biennium, we have added to our stock of merchandise carried in our stores several new lines of materials, along the lines suggested in my last biennial report, as follows:

We carry a full line of staple paints, oils and colors; a line of paint brushes, shovels, hardwood tool handles, standard sizes of wire for electrical work, garden hose, bar soaps, such as white floating, brown laundry, toilet and castile; and there are still other lines that should be added as soon as we can secure the necessary space for handling. At present, all the available space we have is full to overflowing.

By buying paints, oils and colors in quantities to supply for several months at a time, we get the best price possible on the larger quantities. We are able to take advantage of the market at the proper time and purchase to advantage. We test our deliveries and know that we are getting materials of proper quality. We reduce the number of tests by at least two-thirds, and a considerable saving is made in cost of laboratory tests as a result. We have the correct material in stock ready for an immediate delivery when needed, thus avoiding expensive delays and waits by mechanics, and the results and incident saving have been very substantial and satisfactory.

By buying shovels, tool handles and electric wire in large quantities and stocking, we secure the quantity prices as well as prompt deliveries to the jobs at the various departments. In stocking garden hose, we are able to buy it from 10,000 to 20,000 feet at a time, securing lowest possible prices, frequently buying at 8 to 9 cents per foot a quality of hose that costs, when bought in small quantities as ordered by the departments, 12 to 15 cents per foot.

By buying bar soaps in lots of 100,000 to 150,000 pounds at a time, we save from 1 to 3 cents per pound, and save from 20 to 40 per cent in the quantity consumed by reason of having it properly cured and hardened before sending it out to the institutions.

Our great need is for more store space on the waterfront in San Francisco, in order that we might add other lines of standard tools and materials, which would not only enable us to secure quantity prices and discounts, but would enable us to standardize more fully the material used in all state activities. Our overhead would not be increased to any appreciable extent by increasing the line, but would enlarge the volume of business and increase the opportunity for increased savings.

A FEW NOTABLE SAMPLES OF SAVINGS MADE BECAUSE OF THE CENTRALIZING OF THE PURCHASING FUNCTION IN THE ONE OFFICE.

In the fall of 1923, through knowledge of conditions and information gleaned from the best authority, the Purchasing Agent became convinced that fuel oil had reached the lowest possible price, and that it was the proper time to enter into a year's contract for fuel oil for the state institutions, rather than buy in quarterly quantities as we had for some time been doing. On December 19, we received bids and entered into contract for one year's supply at an average price of $1 per barrel, f. o. b. shipping point. There was an advance of 25 cents a barrel before the contract was signed, and in less than two months another

advance of 25 cents a barrel. As a result, we saved for the state 50 cents per barrel on approximately 250,000 barrels of oil, or $125,000.

Sugar.—By reference to our comparative Table VII, showing comparison between prices paid by Purchasing Agent with market prices, you will note that market price on sugar is refinery price to jobber. You will note that every quarter we bought sugar at less than the refinery price. We were able to do this by watching the market, and by getting inside information as to probable trend, and also because of our revolving fund, we could buy at the right time and secure the lowest possible price by paying cash and taking the discounts. You will note that the prices we paid were all the way from 22 cents under the refinery price up to $1.33 under, or an average for the eight quarters of 65 cents per bag of 100 pounds. The state uses an average of 2400 bags each quarter, or during the biennium 19,200 bags, and this quantity, at an average of 65 cents per bag under refinery price, shows a total saving of $12,480 on sugar for the biennium.

Paints.—Twice, during the past year and a half, we bought, on advance information of a rise in price, 30 barrels of linseed oil. By using our revolving fund at an average saving of 8 cents per gallon on the two lots, totaling 60 barrels, or 3200 gallons, we made a total saving on the two lots of $256.

Steel.—San Quentin prison used approximately 10,000 shuttle springs and 5000 protection rod springs for the jute mill in a year. For years, we have had difficulty in securing for them steel from which they could make the springs in their own shop. The total cost of the springs to them, exclusive of their own labor, was an average of 31 cents each, including tempering the finished spring, which had to be done by outside parties. We took it up with an eastern spring manufacturing company, with the result that we secured for them a completed spring costing, on an average for the two kinds, 12 cents each, delivered at the prison. They report that they are lasting longer and are more satisfactory than the old spring. This will show a saving in actual cost of 19 cents each on a probable 15,000 each year, or $2,850, which saving will be increased by the decrease in number used by reason of longer life, as we have a letter from the prison estimating, after using the new spring, their yearly requirements at 5000 of the shuttles and 3000 of the protecting springs. The cost of a year's supply on the old plan was approximately $4,650. A year's supply on the new plan would cost approximately $960.

The Folsom state prison uses a considerable quantity of drill steel in their rock quarries. The cost of that steel had averaged 10 cents per pound. Sometime ago, we found a new source, bought a trial order at 6½ cents per pounds. The Folsom prison tried it out and found it just as satisfactory as the steel they had been using. The last two purchases, totaling 4500 pounds, was bought at 6½ cents, a saving of 3½ cents per pound, or $157.50.

Clothing.—During the last two years, we have been able to purchase from various large clothing stores at clearing-out sales of their surplus stocks, approximately 400 men's and youths' suits of well known and popular makes. We paid from $12.50 to $15 each for suits

that the dealer sold at from $30 to $50 each, saving easily over jobber's prices an average of $10 per suit, or $4,000 on the lot.

We purchased for the Veterans' Home, 500 New York State National Guard uniforms, perfectly new, unsalable by New York on account of change in uniforms, at $5 per suit, material and workmanship fully equal to the regular uniforms purchased at $20 each. This was a saving of $15 on a suit, or $7,500 on the lot.

On account of change in the regular demand for 27-inch gingham by the general trade, we were able to purchase a 10,000-yard lot of gingham of desirable assorted patterns at 13 cents per yard from a jobber clearing up his surplus when the regular market was 17½ cents per yard on the same goods, thus showing a saving of 4½ cents a yard, or a total of $450.

Shoes.—We learned of a lot of U. S. Army cap-toe trench shoes offered at a very low figure, new goods. We purchased 2500 pairs at $1.97½ per pair, delivered to our stores in the Ferry Building. These shoes could not be manufactured by our own institution at less than $4 per pair. By using our revolving fund for this purchase, a saving of $2 per pair was made, or a total of $5,000 for the lot.

Stationery and office equipment.—In 1922, we had a quantity of account ledger paper of a quality generally used, offered by an eastern firm closing out their local stock in warehouse. The price paid for the same quality on open bid was 29 cents per pound. This lot we purchased for 16 cents per pound, making a saving of $327.60 on the transaction.

In October, 1923, the Sutro Branch of the State Library was closed, and the library in the new San Francisco building had already been equipped and installed. The equipment consisted of general library furnishings, such as book stocks, tables, chairs, etc. A dealer offered for the lot, $1,000. We advised against the disposal at the price, and had the equipment stored in the new State Building. We have since disposed of all of it, mostly to schools, etc., outside of state activities, and received for it a total of $2,805, besides giving those who bought it an equipment for about one-half the cost of new, and no better equipment

And so we could go on almost indefinitely with examples of savings made. Almost every day comes to us opportunities which we never fail to take advantage of, in which savings can be accomplished in matters of price on special offerings, or more suitable merchandise.

One of the most important duties of a Purchasing Agent, to my mind, is the direction of the attention of those in charge of the enterprise for which he purchases to more suitable material or equipment when it is available.

These examples are given to indicate some of the many ways in which the Purchasing Agent's organization of experts in various lines of merchandise may effect worthwhile savings by application.

OBSERVATIONS AND SUGGESTIONS.

In my opinion, all the labor possible now unused in the various institutions should be employed in the production of products used in various state requirements. This would not only tend toward saving in funds, but at the same time would be advantageous to the inmates.

Many states have found it to their advantage to make, at their penal institutions, their automobile license plates. The number of plates used in California the coming year will reach approximately 1,500,000. The contract price will be well along toward $250,000 a year. To my mind, there should be provided at Folsom prison a plant for making the automobile license plates. They have the labor going to waste, and they are located admirably for the economic handling of the material and production of license plates, as well as other lines of metal work of that nature, such as highway signs, street signs, and all sorts of metal containers and equipment used in various state departments.

Blanket Authorization.

The amount of purchases made by various departments on blanket authorization is still entirely too much, and this privilege is used in very many instances for purchases that can in no wise be determined emergencies. I recommend that these amounts be cut down a very considerable extent. I also recommend that claim schedule covering such purchases be filed entirely separate and that they be not combined with claims for expense, traveling, etc.

Payment of Freights.

About a year ago, we changed our method of purchases to getting price f. o. b. shipping point, instead of f. o. b. institution's station, believing that this method would not only be a saving to the state but would also be more satisfactory to the bidder. During the first year we have filed fewer claims for refunds in freight than I had anticipated, showing that the transportation companies are figuring rates very carefully. A large part of the errors discovered, however, are corrected by the companies upon being called to their attention, and the expense bills corrected before they are paid by the institution. Then, too, by this method, we are paying the exact freight on the various commodities handled by the transportation companies, and not an estimated transportation cost added to the price of the goods. The general satisfaction expressed by the bidders with the new method is also an evidence of the wisdom of that method. This new method has not yet reached its full effectiveness and efficiency, as it takes time to make everyone connected with the handling of materials at the various institutions conversant with new regulations.

Store Rooms.

The Purchasing Department's storeroom facilities in the Ferry Building, San Francisco, should be increased very materially, in order that a wider range of standard and nonperishable supplies could be bought in larger quantities and distributed from the stores.

A number of the institutions have insufficient accommodations in their commissary and stores. Some of the institutions that have railroad switches serving them do not have their storeroom on that switch. In every instance, the store or commissary should be situated on the spur track or switch, where they have one, in order to prevent hauling and rehandling as much as possible, thus saving in expense and in damage to materials.

The Stockton State Hospital, Agnews State Hospital and Norwalk State Hospital are examples of this. All three are served by spur tracks, but in neither case is the storeroom situated on the spur track.

San Quentin prison certainly needs, very badly, a general commissary building on the waterfront, where *all* materials may be kept and stored and from where they may be distributed to the various activities of the institution.

Surplus Materials.

There should be kept, in conjunction with the stores department, preferably in San Francisco, a salvage department where all used equipment from the various institutions, especially in the northern part of the state, should be sent for reconditioning or sale. This, of course, would not apply to material commonly known as junk, as frequently junk can be disposed of to local junk dealers for more than could be realized in the central marketing place, by reason of the local freight rates applying. It does apply, however, to machinery and equipment of all kinds, as centralization of such equipment would be of easy access to the buyer looking for such material. In many cases, also, such material not needed by one institution or department, would be found useful to some other institution and save the price of a new equipment.

Surplus of Products.

When an institution has a surplus of any product, either produced on the farms of the various institutions, or manufactured by them, it should be listed with the Purchasing Agent in order that this surplus might be applied to the needs of some other institution or state activity that has sent in a request for the purchase of a like commodity.

I can not close this report without expressing my appreciation of the hearty cooperation of those in charge of the institutions and departments, the Board of Control, and the Director of Institutions, for the earnest consideration of suggestions I have made for improvements in methods of handling the great mass of business in the purchase and delivery of materials to state activities. The team work has been splendid.

The foregoing report, while necessarily condensed and cut down in every way possible, is sufficiently enlightening, I trust, to give you adequate information and evidence of some real accomplishments along the line of economy and efficiency in the state's business, carrying out our esteemed Governor's watchword.

I want to say, also, that whatever saving and improvements that have been accomplished could not have been made without the excellent cooperation and help of our whole office force, and in an especial way to my assistants in the various lines of commodity purchases, Mr. Mispley, Mr. Burton, Mr. Hobart, and Mr. Brudigan.

Respectfully submitted.

W. G. McMillin,
State Purchasing Agent.

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STATE OF CALIFORNIA

FISH AND GAME COMMISSION

TWENTY-EIGHTH BIENNIAL REPORT

For the Years 1922-1924

CALIFORNIA STATE PRINTING OFFICE
FRANK J. SMITH, Superintendent
SACRAMENTO, 1924

34744

BOARD OF FISH AND GAME COMMISSIONERS.

Commissioners appointed by the Governor, by and with the consent of the Senate. Term at pleasure of Governor. No compensation.

F. M. NEWBERT, President ..... Sacramento
M. J. CONNELL, Commissioner ..... Los Angeles
G. H. ANDERSON, Commissioner ..... San Jose

GEORGE NEALE, Executive Officer ..... Sacramento
J. S. HUNTER, Assistant Executive Officer ..... San Francisco
R. D. DUKE, Attorney ..... San Francisco

SACRAMENTO DIVISION.

F. M. NEWBERT, Commissioner in Charge
GEO. NEALE, Executive Officer
Forum Building, Sacramento
Phone Main 4300

SAN FRANCISCO DIVISION.

G. H. ANDERSON, Commissioner in Charge
J. S. HUNTER, Assistant Executive Officer
Postal Telegraph Building, San Francisco
Phone Sutter 6140

LOS ANGELES DIVISION.

M. J. CONNELL, Commissioner in Charge
EDWIN L. HEDDERLY, Assistant
Pacific Finance Building, Los Angeles
Phones: Broadway 1155, Home F 5705

DEPARTMENT OF FISH CULTURE.

W. H. SHEBLEY, In Charge ..... Sacramento

DEPARTMENT OF COMMERCIAL FISHERIES.

N. B. SCOFIELD, In Charge ..... San Francisco

DEPARTMENT OF EDUCATION, PUBLICITY AND RESEARCH.

DR. H. C. BRYANT, In Charge ..... Berkeley

FRANK M. NEWBERT, President.

M. J. CONNELL.

GEO. H. ANDERSON.

GEORGE NEALE, Executive Officer.

BOARD OF FISH AND GAME COMMISSIONERS.

FIG. 1. Ducks—Pintail, widgeon and mallard, which have been feeding in nearby rice fields. Photographed on Butte Creek, Sutter County, California, January 18, 1924. Photograph by George Thompson.

LETTER OF TRANSMITTAL.

Sacramento, California,
September 1, 1924.

His Excellency, FRIEND WM. RICHARDSON,
Governor of the State of California,
Sacramento, California.

SIR: In fulfilment of legal stipulation, we hand you herewith a biennial report of the activities and accomplishments of the Board of Fish and Game Commissioners of the State of California and trust that it will meet with the approval of yourself and of the members of the legislature. As in the past, there will be found a summary of accomplishments, reports of the various departments and, in the appendix, a complete statistical statement.

Yours truly,

GEORGE NEALE,
Executive Officer.

TWENTY-EIGHTH BIENNIAL REPORT.

INTRODUCTION.

To properly administer the fish and game resources of a great state like California is at best a difficult undertaking. With forces of destruction to be fought at every turn, new problems arise daily. But with finances in a more settled condition, and with the confidence that the administration, the sportsman and the conservationist have given us, our burden has been lightened and our belief in the worthwhileness of conservation work constantly strengthened. With this review of accomplishments in which the perplexities are overshadowed by the final attainments, the Commission is ready to set its face toward the future with renewed energy and optimistic outlook.

PERSONNEL.

One change in the personnel of the Commission was occasioned on December 12, 1922, when George H. Anderson of San Jose was appointed a Fish and Game Commissioner to succeed Mr. E. L. Bosqui of San Francisco.

During the biennium death has claimed five valuable employees, two of them victims of accidental death: W. C. Fassett, superintendent of Fort Seward and Ukiah hatcheries; John J. Barnett,* Deputy Fish and Game Commissioner; James S. White,* Deputy Fish and Game Commissioner; S. L. N. Ellis, Deputy Fish and Game Commissioner; Earle Downing, assistant, Commercial Fisheries Department; Lloyd V. Evins, assistant, Department of Fish Culture; Mrs. Lulu Creasey, secretary to the executive officer.

FINANCES.

The decision of the Supreme Court of California in the recent case of *Board of Fish and Game Commissioners* vs. *Ray L. Riley, State Controller, etc.*, 67 Cal. Dec. 581, has had the effect of entirely relieving the very critical situation with respect to the funds and activities of the Fish and Game Commission owing to "frozen" funds in the state treasury.

This important case had its inception in the application on the part of the Fish and Game Commission to the Board of Control and to the Governor for permission to create a deficiency and to draw upon the special fish and game preservation fund in the state treasury for its payment. This action was taken in conformity with the provision of section 680 of the Political Code, which purported to authorize the Board of Control, with the approval of the Governor, to create such deficiency and to order the payment of claims arising therefrom out of whatever special funds were in the state treasury applicable to such uses. At the time this application was made the special fish and game preservation fund in the state treasury amounted to approximately the sum of $280,000. The Board of Control passed an order in accord with such application and Governor Richardson approved the same, but the

State Controller, in order that he might be perfectly protected in his allowance of the claim thereupon presented by the Fish and Game Commission in accordance with said order, insisted upon a decision of the Supreme Court justifying and commanding such allowance. The Fish and Game Commission thereupon brought this proceeding before the Supreme Court seeking a writ of mandate to compel the State Controller to approve and allow its claim. The matter was presented to the Supreme Court *en banc* and the court handed down its decision thereon upon June 12, 1924.

The opinion which was written by Mr. Justice Richards and concurred in by all the members of the court reviews exhaustively the history of the creation of the special fund of the Fish and Game Commission and of the legislation relating to the use of said fund. It also reviews the several recent decisions of the Supreme Court interpreting and applying the provisions of the budget amendment and of the budget bill. It holds that section 680 of the Political Code has application to such cases of urgency as this and to the relief of self-supporting boards and commissions having special funds derived from fees, fines and collections and devoted to the particular activities of such boards and commissions. It is needless to say that the decision of the Supreme Court in this important case has given widespread satisfaction.

The sole support of the Fish and Game Commission's work is dependent upon licenses paid by hunters and anglers and by the fines imposed on violators. Although there has been some increase in the number of licenses sold in the past two years, yet funds are not adequate for necessary conservation work. A deficiency appropriation allowed by the Governor and State Board of Control prevented a serious handicap to the work pending a court decision which released the "frozen funds" of the Commission. A complete itemization of the income and expenditures will be found in the appendix.

Most states have found it necessary to increase the license fees to properly administer natural resources. California, even against pressure by the anglers of the state, has maintained its nominal license fee. However, the increasing demand for a greater output from the hatcheries and for better patrol makes it advisable to recommend a special license for deer and an increased angling license fee.

VALUE OF FISH AND GAME RESOURCES.

Following the present tendency to try and estimate the actual value of fish and game resources the following is offered. Nearly a half million hunting and angling licenses are issued annually. If each licensee spent an average of $100 somewhere near $50,000,000 is expended in the pursuit of fish and game. Add to this sum the $25,000,000 valuation of the output of the commercial fisheries and we have a total of $75,000,000. Cut this for safety to $60,000,000 and we have a conservative estimate of the business created yearly because there is game and fish available to the sportsman, and fish resources in the sea. This business is well distributed throughout the state and there are few business men who do not profit therefrom. And this business has been built up on a "taxation by participation" license plan and is not supported by general taxation.

FIG. 2. California's Game Refuges in 1916. (See Fig. 3.)

LAW ENFORCEMENT.

That the wardens have been active in bringing the violator to justice is evidenced by the increased number of arrests. During the year 1923, 338 more arrests were made than during the previous year, and 457 more arrests were made in the past two years than in the previous biennium. An encouraging increase in the percentage of convictions, which exceeds 97 per cent, has been noticeable and $17,428.25 more in fines went into the fish and game protective fund than in the year 1922. Violations of the deer laws and of the bag limit laws continue to bring the largest totals in fines.

There has been a laudable tendency on the part of judges to be less lenient with fish and game law violators, with the result that jail sentences and heavy fines were often given. In 1923-24, for the first time, the jail sentences amounted to more than 1500 days, reaching a total of 4565 days.

Material increase in the warden service commensurate with the large land and water areas of the state is urgently recommended.

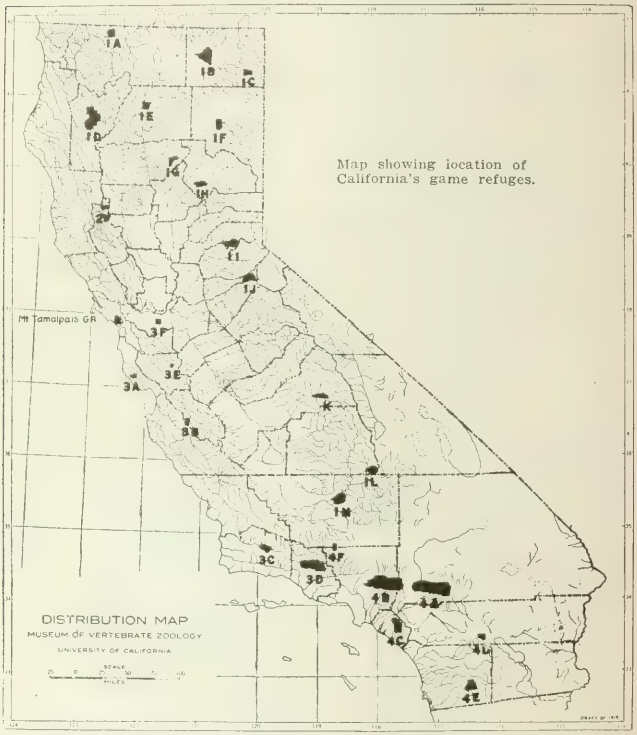

FIG. 3. California's Game Refuges in 1924. (See Fig. 2.)

A COMPARISON.

On the accompanying map will be found interesting comparisons as to the income, expenditures and activities of the various state fish and game commissions. Considering the area and the wild life resources of the state, the sum expended on patrol and on other work of the California Commission is not adequate. A comparison of the patrol expense per square mile of territory in all the states from which record's were obtainable shows that California expends $0.64 as against New York's $6.60, Massachusetts' $8.44, Wisconsin's $2.60, Illinois' $3.35 and Missouri's $1.06. Even the Pacific coast states of Oregon and Washington show $0.71 and $1.13 respectively. Texas appears to spend less than all—but 3 cents per square mile of territory.

1921
LEGEND

FISH CULTURE.

During the past two seasons the output of the state's hatcheries has been greater than that of any similar period since the beginning of fishcultural operations. The total trout fry planted reached 56,527,105, and of salmon fry, 35,495,550. All available hatcheries and egg-collecting stations were operated during the biennium. Work was handicapped at some of them because they are still operated under tents, pending the construction of permanent hatcheries.

With an ever growing demand for a larger output of fry, the fish-cultural department looks with alarm at the possible destruction of the best source of egg supply left for the hatcheries in the state—the Klamath River. The building of a 250-foot dam can only mean the destruction of the run of king salmon and sea-run trout which has for several years furnished our state hatcheries with practically all of the salmon eggs and a large majority of the trout eggs. Proper stocking of the streams of the state is absolutely dependent upon the saving of the Klamath River as a fish reserve and the building of more hatcheries.

Worthwhile additions to the stock of fish in the state have been made. A quarter of a million cutthroat trout eggs from the Rocky Mountains were received, hatched, and planted in the streams of the northwest coast region. Eighty thousand eggs of the Mackinaw trout from the Great Lakes were obtained and resultant fry successfully planted in Clear and Eagle lakes. A fine, pure strain of Eastern brook trout was secured for the state through the exchange of a million Loch Leven eggs for a million eggs of this species with the New Jersey Fish and Game Commission.

Screen and ladder surveyors report difficulty in enforcing installation of fishways and of screens and, in many instances, legal proceedings have been necessary. Too often a dry year furnishes an excuse for not providing the fishway with sufficient water to make it usable. The idea seems to be prevalent that water for irrigation and power is more valuable than that used for saving fish life.

Recommendations include:

1. Legislation requiring a sufficient flow of water in a stream to maintain fish life.
2. Better means to force installation of screens and fishways.
3. Increased financial support for the building of new hatcheries and the enlarging of the pond system.

COMMERCIAL FISHERIES.

The fisheries of the state have made a distinct recovery from the post-war slump. In both weight and value, the catches the past two years exceed those of 1920. The total pack at the canneries amounted to 1,981,027 cases in 1923 as against 831,232 cases in 1921. A notable increase in such fish products as smoked salmon, dried squid and salachini is indicated. Dried squid reached the quota of 99,000 pounds. Fish meal and fish oil, by-products of the canneries, also showed a notable increase—nearly 3000 tons in the case of fish meal between 1921 and 1923, and over 6,000,000 gallons in the case of fish oil. The total value of the catch shows an increase of more than eight and a half millions of dollars in the same period of time. In spite of the fact that the value of the plants decreased nearly a million and a half,

there was an increase in the number of those employed in the fisheries. A compilation showing the nativity of fishermen shows 1032 as citizens out of a total of 4123, with 106 unreported as to nativity. There was a decrease in the take of both albacore and salmon in 1923 over that in 1921. On the other hand, the take of barracuda, shad and mackerel was increased and sardines showed a gain of 170 per cent.

The most important problem confronting the Commercial Fisheries Department has been the regulation of the amount of sardines used by the reduction plants. The Fish Conservation Act has been found difficult to enforce and should be amended. The determination of "unavoidable" waste is exceedingly difficult. The amount of food fish to be utilized in making fish oil and fertilizer should be definitely stated in the law, a violation should be a high misdemeanor and the goods manufactured in violation of the law should be subject to seizure by the state.

Sentiment against the purse seine fishery appears to be based on the ancient objection that a new method or appliance upsets the old order of things. Investigation has shown that, properly regulated, this fishery is a worthwhile development and does not necessarily endanger the supply of food fishes concerned.

Striped bass and shad now have sufficient protection in that these species are given a closed season of two and one-half months. This law makes the season for striped bass the same as that for shad.

The salmon has had insufficient protection. A flaw in the law passed by the last legislature made it impossible to eliminate ocean trolling during the months when many immature fish are caught. Investigations have shown that ocean trolling for salmon causes the destruction of many immature fish and has shown exactly the season when mature fish are to be taken by this method. This fishery has constituted an added drain on the salmon supply and should be definitely restricted to a short season. Washington and Oregon have stopped both trolling and purse seine fishing for salmon and they urge this state to do likewise.

There is great need for an additional patrol boat for the northern section of the state. Although the south is cared for, no seagoing vessel is at present available in the northern part of the state for the enforcement of salmon and crab laws.

As a result of the salmon investigation it has been possible to fix accurately the times of year which should be closed to salmon fishing in the sea in order to prevent the destruction of immature fish. Extensive marking experiments have shown the range at sea of salmon and furnished knowledge of the age and rate of growth. Progress is reported on both the albacore and sardine investigations.

STATE FISHERIES LABORATORY.

Although handicapped by a loss of members of the staff, the State Fisheries Laboratory has been able to bring to completion the first part of the sardine investigation and to add valuable data in connection with the albacore investigation. Several members of the staff, being offered better positions, left the service. Their places have now been filled and, in addition, two assistants have been appointed under a

cooperative agreement with the Federal Bureau of Fisheries. Most of the staff is busily engaged in gathering statistics and in compiling them.

The main conclusions in the sardine work are as follows:

1. In order to have an accurate picture of the commercial catch, it is necessary to take samples at least twice a week.

2. Studies of fluctuation show this phenomenon to be due to one of two factors:

(*a*) Presence of dominant age groups which may appear in cycles of several years.

(*b*) Diminution due to relatively unsuccessful spawning. No regularity in this instance has been discovered.

3. Reliable forecasts of the commercial catch can be made as a result of statistical study.

4. From available statistics, overfishing can not be readily detected in time to prevent depletion.

5. Since sardines are the source of food for albacore, barracuda, sea bass and tuna, the effect of overfishing would be far-reaching.

Further study of the albacore emphasizes the fact that migrations are not concerned in the peculiarities of the fishery. So-called "runs" are not the result of migrations, but the result of schools already present which begin to take bait at the surface.

Studies have shown that albacore 21½ inches in length are just completing their second year; those averaging 27 inches in length are finishing their third year; and those 38 to 40 inches in length are in their eighth year or over.

The purse seine investigation, when completed, brought out some interesting facts. Up to 1915 there was but one purse seine boat; thereafter, five were in service, and by 1920, over 100 boats were being utilized in the fishery. Blue-fin tuna are taken only by the purse seine boats, and the winter supply of barracuda, yellow-tail, and white sea bass is largely dependent upon this part of the fishery. In fact, over one-half of the fish reaching the fresh fish markets of Los Angeles harbor is a product of this fishery.

Attention is called to the fact that the grunion, the life history of which was worked out by the laboratory, will sooner or later need protection as grunion fishing is a popular sport on the beaches of southern California.

This year will see added to the files the fifth successive annual statistical record of the daily catch. The total take by locality has been published quarterly. These statistics are more complete than those collected by any other government and will give a dependable comparison of abundance in successive years, a fundamental need in the proper development of fisheries. In addition, biological data as to the varying composition of the catch in regard to sex, size, and other features, has been assembled.

EDUCATION AND PUBLICITY.

The Department of Education and Publicity was very active during the past biennial period, as shown by the report submitted. Many more people were reached through the medium of lectures than in any previous biennium. The work in the summer resorts has proved par-

ticularly productive in the building of a favorable sentiment. Thousands of people are reached at a time when they are most susceptible to information on fish and game and, with emphasis placed on first-hand information, conservation ideas are easily instilled. Schools, boy scout organizations, men's service clubs and groups of every kind have been reached by means of lectures, motion picture displays and literature. The quarterly magazine, CALIFORNIA FISH AND GAME, has continued to carry to its readers reliable information regarding the activities of the Commission and the conservation program of the state. This publication is used regularly in high school classrooms and the call for it from the sportsmen who support the work of the Commission is continually growing. Wide publicity has been secured through the medium of newspapers and magazines.

STATE FAIR EXHIBIT.

Each year the Commission has made an attractive exhibit at the State Fair in Sacramento. The permanent exhibit comprises a great panorama of the Sierra with wonderful lighting effects to show dawn to daylight and sunset to night. Cloud effects and a thunder storm were very realistic. On those days when the attendance was the greatest a count showed 1500 persons, per hour, viewing the exhibit.

Aquaria contained the different species of trout and all fresh water fishes found in the Sacramento region. Golden trout from mountain lakes at an elevation of 10,000 feet, after a journey of nearly a thousand miles by pack train, truck and railroad, were on display. Baby trout just hatched from the eggs and baby salmon were to be seen in the small model hatchery.

Those who visit the State Fair can not help but be convinced of the extensive work being carried on by the Commission in caring for and conserving the fish and game resources of the state. The following letter expresses the appreciation of the directors of the State Fair.

CALIFORNIA

STATE AGRICULTURAL SOCIETY

Sacramento, Cal.

September 9, 1922.

California Fish and Game Commission,
Sacramento, Calif.
Gentlemen:

We, the Board of Directors of the California Agricultural Society, take this opportunity to thank you for the beautiful and educational display of the work of your commission made at the State Fair in 1922; particularly do we wish to commend the enterprise of the commission in placing such a large and comprehensive exhibit. We trust this has given the people of California an idea of the importance of the work of the Fish and Game Commission.

On every hand we have heard favorable comment upon your educational features and we sincerely hope that when the Fair opens next year you will be with us again with an equally attractive display.

Again thanking you and assuring you of our desire to cooperate with you in the years to come, we remain,

Sincerely yours,

STATE AGRICULTURAL SOCIETY,
H. A. JASTRO,
President.

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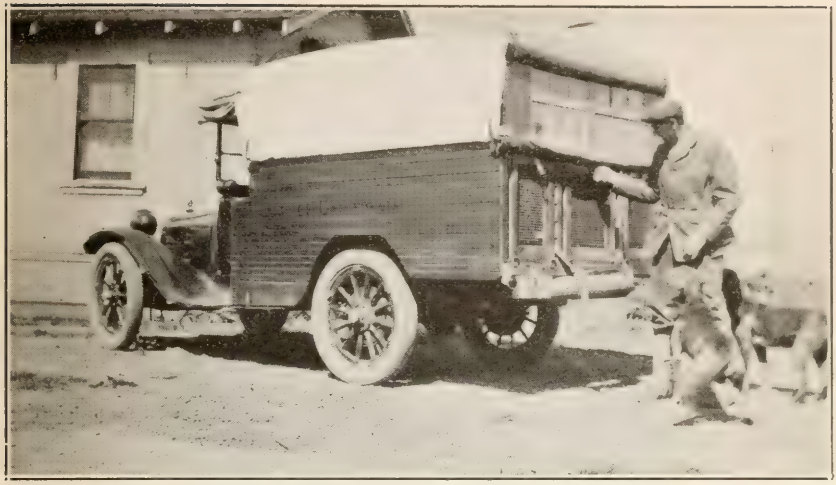


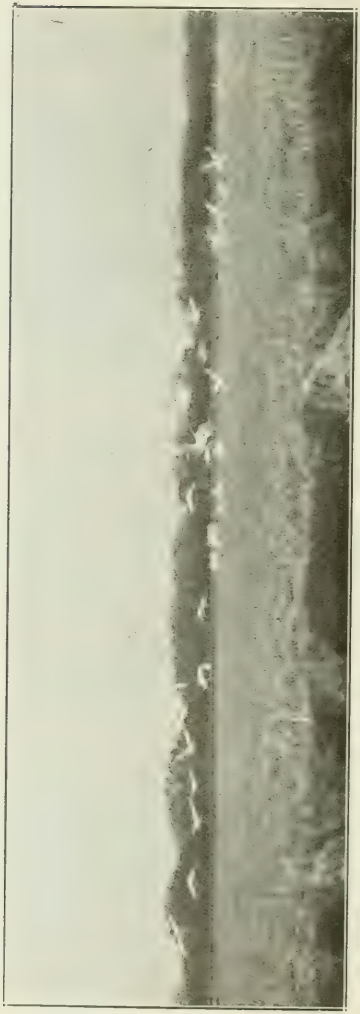
FIG. 4. Jay Bruce, State Lion Hunter starts on a trip. Photograph by Mrs. J. Bruce.

MOUNTAIN LION CONTROL.

During the past two years state lion hunter Jay Bruce, secured sixty lions of which 34 were males, and 26 females. Of this number fourteen were animals less than a year old. Many of the lions (49 in all) were taken in or near game refuges, localities which are worked consistently because of the direct relation to deer conservation. It is believed that the total average lion population of the state has been reduced about 100 as a result of the activities of the state lion hunter. Complaints of the depredations of bears have been consistently investigated but no reliable evidence has been obtained that stock had been killed by them. However, frequently there is evidence that bears have fed upon stock killed by other predatory animals than bears. A complete summation of the lion bounties paid will be found in the appendix.

FISH AND GAME PROTECTIVE ASSOCIATIONS.

The staunchest kind of support for conservation measures comes from the twenty or more fish and game protective associations of the state. Could this favorable sentiment be unified in one great state organization the sportsman's interests could be better cared for. The Commission has been glad to lend support to these organizations and to receive suggestions from them. A plan is being evolved to center all of these protective associations in a central organization to be known as the California Conservation League, in an attempt to crystallize sentiment and avoid duplication of effort.



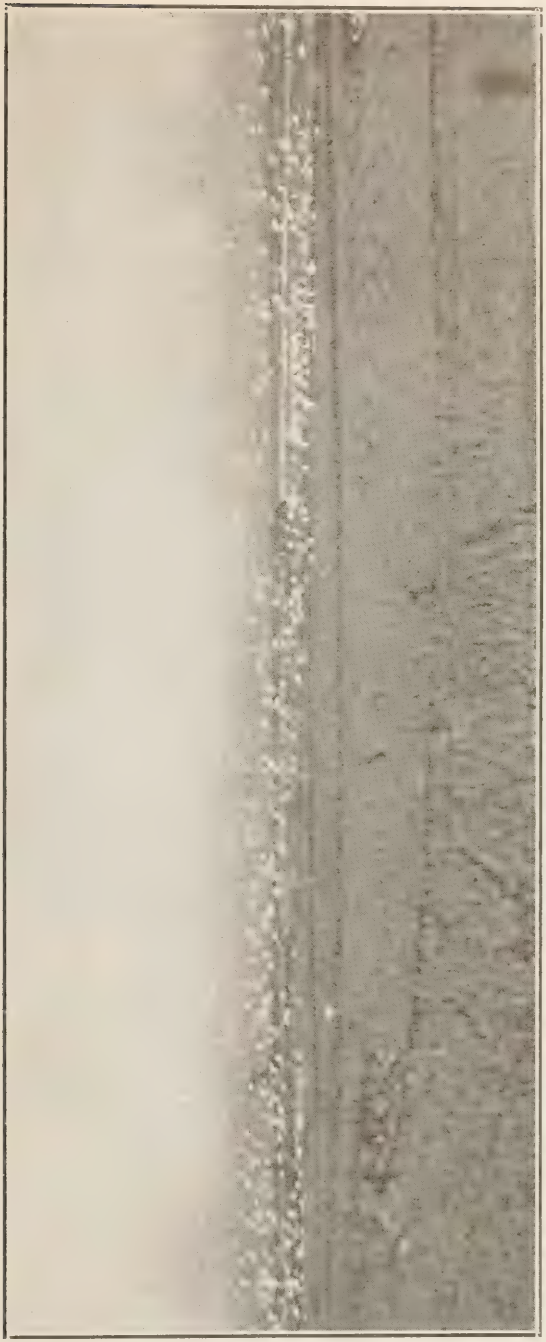


FIG. 5. Whistling swans in rice fields near Richvale, Butte, County, California. January 19, 1924. Photographs by George Thompson.

GAME CONDITIONS.

At the last legislature the bill providing for a deer license and a one buck limit which was proposed as a means of giving better protection for deer failed of passage by reason of the belief that the money would revert to the general treasury instead of to the fish and game preservation fund. This legislation must eventually come if we give the one large species of game mammal left in the state, in sufficient numbers for hunting, proper protection. The mule deer of the lava beds in Modoc County particularly need protection as the toll now being taken is altogether too large.

An unusual problem presented itself during the winter of 1923 when large numbers of deer met death by falling into a cement power ditch on the American River near Placerville. Immediate action was taken with the result that more than 500 deer were safely rescued from the ditch and bridges allowed the safe crossing of more than 2800 others—all on a front of seven miles. The Western States Gas and Electric Company, owners of the ditch, cooperated in rescuing the deer and a fence which has been installed will prevent a similar occurrence another year.

FIG. 6. Lower Klamath Lake as it appeared in the spring of 1924, once a federal bird reservation and California's most extensive waterfowl breeding ground. Due to unwise drainage it is now but an alkali waste. Photograph by Blanche Shaw.

The closing of the season on tree squirrels by the 1923 legislature proved a benefit to a species greatly reduced in numbers by a serious epidemic of disease. A continuation of the closed season beyond the September, 1925, date would doubtless be advantageous.

Wildfowl conditions continue favorable. If breeding and feeding grounds can be maintained by developing an unfavorable sentiment toward the endless drainage projects the future looks bright.

FISH CONDITIONS.

The spring and summer of 1924 proved so dry that there was a consequent destruction of fish. Many streams that normally have plenty of water to support fish life dried up entirely, with resulting destruction of all fish life in them. Deputy fish and game commis-

sioners, forest officers and park rangers aided materially by transplanting fish from isolated pools to permanent streams. It will doubtless take several years to recoup from the depletion due to the past season.

Low water in the streams in many instances made fishways ineffective. With water several feet below the crest of a dam no water enters the fishway and migratory fishes are prevented from reaching their spawning ground. Too often thought of the conservation of fish life is obscured by the demand for electric energy. A whole stream is sometimes diverted from its course or the entire flow utilized in a power plant, leaving a dry stream bed and complete destruction of the fish life, a natural resource impossible to replace.

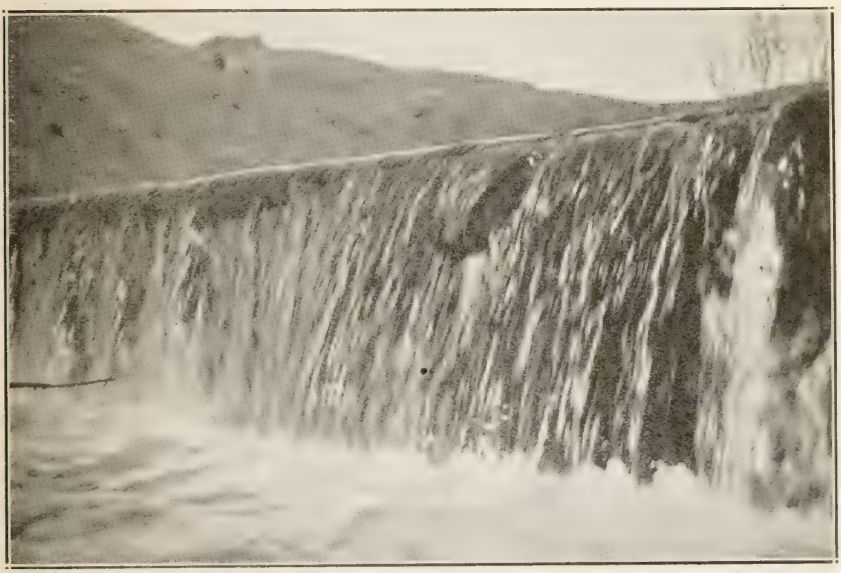


FIG. 7. One version of "Over the top." Steelhead trout jumping a waterfall in Trinity County. Photograph by C. O. Fisher.

Heretofore, power development has taken place high in the mountains with no serious loss of breeding grounds to migratory fish. The proposed building of a 250-foot dam near the mouth of the Klamath River with the consequent issuance of preliminary federal and state permits presented a very fundamental conservation problem. Since salmon have not been known to successfully negotiate more than a 40-foot fishway, it hardly seems probable that any method can be devised for carrying them over a 250-foot dam. It appears certain that the construction of such a dam would mean the ultimate destruction of the last unspoiled run of king salmon and steelhead trout left in the state. Furthermore, the proposed development on the Lower Klamath would mean the destruction of the best source of egg supply for the state's fish hatcheries. Almost the entire supply of salmon eggs is secured at Klamathon, and the best supply of trout eggs is secured at the four or five egg-collecting stations along this river. Practically every stream in the state, and most of the lakes, have been stocked with eggs secured from the Klamath River trout.

The Fish and Game Commission felt that it would be derelict of its duty if it did not champion the saving of the fish in the Klamath. It consistently fought the applications for permits and failing in this decided that the saving of the fish could be accomplished only by submitting the matter to the people through an initiative. Consequently, in the spring of 1924 the Commission aided in securing an initiative petition which finally went to the Secretary of State with the largest number of names ever turned in on a similar petition. As a result, the matter was referred to the people for a vote. The measure provided for a fish reserve which would be open to the angler and available for a source of eggs for the state's hatcheries, but be closed to the building of dams or other obstructions that would hinder the migration of fish. The saving of the fishery resources of the Klamath are largely dependent on a favorable vote on this measure.

PROBLEMS.

The main problems of the Fish and Game Commission are still to be summed up in three words: "pollution, drainage, and power dams."

In spite of useful laws and better public sentiment, the pollution of inland and coastal waters with oil still continues. It is hoped that the aid of federal legislation will help to improve conditions.

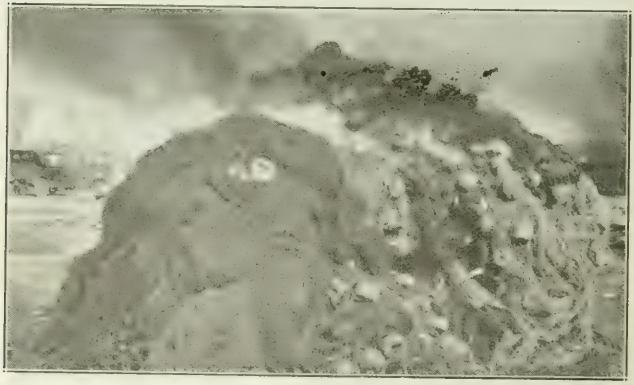


FIG. 8. One year's accumulation of illegal nets in the Sacramento District being destroyed by fire, March, 1924. Law provides for this mode of disposal of those nets having illegal mesh. Photograph by George Neale.

No better example of the danger attendant upon unwise drainage has been afforded than that of Lower Klamath Lake in the northeastern corner of the state. This lake was in a federal bird reservation and here thousands of shore birds and waterfowl reared their young each year. The area was drained at an expense of $300,000 and now it is discovered that the lake bed is wholly unfit for agriculture and residents and conservationists alike are pleading for a reflooding of the lake. It was only through decisive action that the

FIG. 9. Evening sees the wild deer come in to feed. Photograph taken near Gazelle, Siskiyou County, 1924, by William Lippincott.

draining of Lake Earl in Del Norte County was prevented. In many instances, lowered water tables nullify the expected valuable results of drainage. Marsh lands have real values and these values should be recognized before it is too late.

The diversion of water from rivers where trout have existed for ages into ditches for power and irrigation purposes have in many cases rendered streams almost barren of fish life. Also the draining of a number of lakes and storage reservoirs by the power and irrigation companies have caused the death of many thousands of trout and bass which it will take the Commission many years to restore. The extreme drouth has been the cause of the drying up of many streams and the consequent death of many fish.

The generosity of the Division of Water Rights in allocating the water of the streams and lakes without the least consideration of the needs of fish life and the overgrazing privileges given in the forests without due consideration of the needs of the wild life of the state are situations difficult to handle. Until such time as due consideration is given to the needs of wild life and less, perhaps, to the almighty dollar, California's wild life will continue to suffer. Legislation should be enacted that would conserve both feed for the deer and other wild mammals of the forest, and sufficient water in the streams and lakes to sustain fish life. Of what use are wardens to protect game that is starving or hatcheries to propagate fish which ultimately meet death because of a lack of water sufficient for their existence?

ACKNOWLEDGMENT.

During the war, the free transportation which had been furnished the Fishcultural Department for the distribution of fish was rescinded, causing a large additional item of expense. The railroads of the state have again generously granted the Hatchery Department transportation for employees and fish. The money thus saved the Commission in planting fish has been made available for the expense incident to a larger output in the state hatcheries. Grateful acknowledgment of the splendid assistance thus afforded by the various railroads of the state is hereby made.

REPORT OF DEPARTMENT OF FISH CULTURE.

The Honorable Board of Fish and Game Commissioners,
State of California.

SIRS: In conformity to the regulations of the Fish and Game Commission, I herewith transmit the report of the Department of Fish Culture for the biennium ending June 30, 1924.

During the seasons covered by this report, we have exceeded the output at our hatcheries over any similar period of fishcultural operations in this state by several millions of trout fry, having hatched and distributed during the seasons of 1922 and 1923, 56,527,105 trout fry besides 35,495,550 salmon fry. This record plus the trout fry on hand that are being distributed this season, will make the largest output of fry and the three greatest years in the history of the Commission's operations.

There were hatched and distributed during 1922 and 1923, 35,495,550 salmon fry. These were all collected at Klamathon egg-collecting station on the Klamath River in Siskiyou County. This take would have been exceeded by ten millions of eggs if our racks had not been flooded by the California-Oregon Power Company at the height of the season, during the month of October, 1923. A more detailed account of this will be given further on in our report.

During the biennial period just past, the same number of egg-collecting stations and hatcheries have been operated as mentioned in our last report. We have practically operated during this time thirty hatcheries and egg-collecting stations. Two of our stations are still operated under tents as the funds have not been available for the construction of permanent hatcheries. Had the funds been set aside from the amount available for fishcultural operations, the output of our hatcheries would have been greatly increased.

As in former years, two fish distributing cars have been used in distributing fry from Mount Shasta Hatchery, as well as from Mount Whitney Hatchery, to the different portions of the state that were not supplied from local hatcheries.

As stated in our last report, we can not emphasize the necessity stronger than to repeat that the streams are fished so hard that very few, if any, adult fish are left for breeders and consequently, the great majority of the fish that are found in them are the result of hatchery production. There is a demand for more hatcheries and a larger output of fry, but funds must be provided before any further

increase of fish from our hatcheries can be had or new hatcheries constructed. Several more hatcheries are needed in the state, not only to supply an ever-increasing demand for trout fry, but to save carrying the fish so far as they are now, paticularly to the more remote parts of the state where the lakes and streams are situated far from the railroad. We are constantly giving instructions to persons applying for fish to make a wide distribution of the fry. The best results are obtained where the fry are well scattered and planted on the ripples and in the shallow water of the lakes some distance from shore.

The large output of our hatcheries did not more than half meet the demands of the applicants throughout the state as the demand for trout fry for stocking the rivers, lakes and streams of California is increasing annually. And with the increasing population of the state, and the popularity of California as a recreation center, the fishing in the mountainous sections where the majority of the people enjoy their vacations is so excessive that measures to increase the number of fry to be distributed each season must be arranged and a shorter open season established to allow the fish to attain a larger growth. Plans must be made for the construction and equipment of more hatcheries, building of pond-rearing systems and the improvement of the egg-collecting stations. The possibility of increasing the output of eggs from the Klamath River by the introduction of a larger number of rainbow and steelhead trout fry, as well as salmon fry, must be stressed so that this river may furnish eggs for the other hatcheries in California, where rainbow, steelhead and salmon are in great demand and where suitable waters are to be found for these species.

The number of hatcheries in the state should be increased as the demand for trout fry exceeds the limit of the present hatcheries. Lakes need to be set aside for the purpose of propagating brood stock from which the eggs can be collected, as well as pond-rearing systems where spawning fish can be reared for egg-collecting purposes. We have but the one egg-collecting pond system at Mount Shasta Hatchery and, to meet the demand of the angling public, the Commission should build one or two more systems equal in capacity to that at the Mount Shasta station. Mount Shasta Hatchery can not be enlarged as the water supply and land is limited to the present capacity of the station. Surveys should be made at an early date to find other suitable sites for pond-rearing systems for there is no method by which eggs can be more easily procured for propagating the exotic species of fishes than in pond-rearing systems.

The State Fish and Game Commission is making an effort to procure more funds to establish pond systems where exotic species of fish can be raised in numbers great enough to furnish at least two-thirds of the supply of eggs for the different hatcheries located throughout the state.

We have one of the best pond systems to be found anywhere at Mount Shasta station; but as stated in a previous report, it is not large enough to meet the growing demand for trout eggs. Approximately 30 per cent of the trout fry collected in California this season were taken from the pond system at Sisson at the average cost per thousand less than the cost of collecting wild eggs when the expense of constructing traps and other paraphernalia necessary in handling the spawners and the work of collecting eggs from wild fish is considered.

Outside of the Klamath River, Lake Tahoe, Bear Lake in San Bernardino County, and Plumas County stations, eggs can be procured from properly equipped ponds for less money than they can be from wild fish when the uncertainty of collecting eggs from wild fish is considered. The droughts, floods, deep snow and extremely cold weather conditions always make the egg-collecting work uncertain. We do not know from one season to another what to expect. During seasons of extremely light rain and snowfall, conditions prevail that are unfavorable for the collection of trout eggs. Other years floods and extremely high and cold water change the movements of the fish and the take of eggs is often far less than we expect. Breaking up of runs of trout in our streams by high dams built by hydro-electric companies and irrigation projects are all having their effect and, to meet these new conditions, the legislature should provide ample funds for the construction of rearing ponds where a sufficient number of breeding fish can be raised to supply the demand for at least two-thirds of the waters to be stocked.

Salmon, rainbow trout, and steelhead trout can be saved to the people for many years to come by the proper development of the Klamath River and the saving of this stream as a fish refuge. If this stream is lost to the public as an egg-collecting stream by the construction of high dams in the lower reaches of the river, it will mean a great loss to the general public. The expense of maintaining pond systems is costly and locations are hard to find where perfect conditions can be found for the rearing of a sufficient number of brood fish, particularly of the rainbow and steelhead species. The development of hydro-electric energy by the erection of high dams in the tributary streams of the Sacramento and San Joaquin rivers has materially reduced the number of salmon in the Sacramento and San Joaquin rivers and Monterey Bay regions. Practically all the salmon now to be found in the Sacramento and San Joaquin river basins and Monterey Bay region are the product of hatcheries at Battle Creek, Mill Creek and Klamath River stations. The number of salmon fry produced in the Klamath River stations has assisted greatly in keeping up the supply in the Sacramento River.

The larger portion of the salmon in the Klamath River are the Sacramento race of king salmon that were introduced into the Klamath River by the Fish and Game Commission in its salmon cultural operations during the years past. The native Klamath River salmon do not appear in any great numbers in the river in the last few years. Our fishcultural experts at the Klamathon station support the view that the large majority of the fish taken from the Klamath River at the Klamathon egg-collecting station are of the Sacramento race.

If the Klamath River is set aside as a fish refuge, by increasing the number of fry planted in this stream, a larger number of rainbow and steelhead eggs will be collected; and, as it is the only river of any consequence left in this state in which there is a run of king salmon to handle for artificial propagation, it is of great importance that this stream be saved as a fish refuge so that the state at all times may have, not only an adequate supply of salmon eggs to keep up the supply of salmon in the Sacramento River and Monterey Bay regions, but also furnish a large percentage of our rainbow and steelhead trout eggs

for distribution throughout the entire State of California. The construction of the proposed high dams in the lower reaches of the Klamath River will break up the run of these anadromous fishes so that the egg-collecting work on this river will soon be a thing of the past.

During the last two seasons, the experimental work on the South Fork of Eel River near Branscomb, where several traps were located and temporary egg-collecting stations established in an effort to collect a large number of steelhead trout eggs and sufficient number of salmon eggs to stock Eel River, has proved futile as the uncertainty of the flow of water in Eel River, caused by extremely low water in periods when the fish should be running, or great floods, has proved that the upper reaches of the South Fork of Eel River where our experiments have been carried on is not a suitable place to attempt to collect eggs of either salmon or steelhead trout. The lower reaches of Eel River are subject to such extreme conditions of water from the minimum to the maximum flow that it is not dependable. The lower reaches of the South Fork of Eel River, near Garberville, or in the vicinity of Lane's Redwood Park, probably would be a suitable site for the collection of steelhead trout eggs; but, until practical experiments have been made in attempting to collect these eggs, no positive statement can be made whether this work can be carried on successfully in Eel River or any of its tributaries, except the Cape Horn dam on the South Eel River, which is now badly affected by the water being held back by the Gravelly Valley Dam during the season of drought, thus preventing the fish from ascending this fork of the river to the egg-collecting station located on Cape Horn dam. During the season just past, the dam did

FIG. 10. A Klamath River king salmon. Photograph by H. C. Bryant.

not fill so as to spill over and, consequently, no fish reached the egg-collecting station this year, thus depriving us of several millions of steelhead eggs. A lease was obtained on Gravelly Valley dam from the Snow Mountain Water and Power Company, the owners of this project, with the intention, if conditions proved suitable, of having this lake set aside as a preserve from which a large number of rainbow might be raised for the purpose of collecting their eggs to stock the streams of the immediate vicinity as well as have a supply to be shipped out to other stations. But protests from the citizens of Lake County, and the refusal of the Forestry Service to grant the Commission a lease on the lands bordering on Lake Pillsbury or Gravelly Valley dam, have prevented this department from carrying out its plans. The citizens of Lake County protested on the grounds that the dam was of greater benefit to them as a fishing resort to the public than for an egg-collecting preserve for the Fish and Game Commission. As they are drawing off the water each season for power purposes and the water in this lake fluctuates to such a great extent, it is somewhat doubtful whether the lake would furnish anywhere near the number of eggs that we formerly collected in the river immediately below the dam before its construction; that is, the Snow Mountain egg-collecting station located at the lower dam owned by this company.

If these protests against our experimenting on this lake are removed, several years will have to elapse before it can be determined how many eggs the brood fish in this lake would produce. The number of eggs that may be collected from fish raised in dams that have fluctuating heads, is always uncertain; and it becomes more apparent, as we look over the great State of California for suitable places where spawn-fish may be obtained, that the Klamath River, the last stream in California that has not been seriously affected by the construction of high dams, should be left to furnish a sufficient number of eggs of rainbow and steelhead to supply the needs of the state in other waters, as well as to provide king salmon eggs to maintain a greater portion of the run in the Sacramento River and Monterey Bay regions; and that adequate pond systems should be constructed for the rearing of our introduced species of fish, such as Loch Leven, European brown trout and Eastern brook trout.

As the fight to prevent the construction of high dams in the Klamath River by the residents of Siskiyou County, sportsmen's organizations and our Commission, has not yet been decided, since the matter is pending before the Federal Power Commission and in the courts of the state, as well as being submitted by an initiative petition to the voters of the state so that they may express their opinion, we can not add anything more to the argument submitted in our last biennial report, but will publish excerpts from the same report so that the matter may be brought before the minds of the people of the value of the Klamath River as a fish refuge.

We reiterate that the great Klamath River should be kept free from dams so that a stock of trout and salmon can be depended upon from that source for many years to come. The Klamath River runs through a mountainous region from the Oregon line, where it enters California, to its mouth on the boundary line of Del Norte County and Humboldt County, where it flows into the ocean.

There is practically no tillable land where the waters of this stream could be used for irrigation. All the small areas of tillable land along this river could be irrigated by tributary streams. Applications have been made to construct large dams on this river for the purpose of developing hydro-electric energy. As there is enough water appropriated in the other river systems of California to furnish electric power for the development of the state for many years to come without destroying the salmon and other anadromous fishes of the Klamath River by the construction of dams impassable by these fish, the construction of high dams in the Klamath River should not be permitted.

We feel positive, from our investigations and knowledge of the habits of the salmon, that the king salmon (*Oncorhynchus tchawytscha*) and the silver salmon (*O. kisutch*) will not ascend a fishway over a dam where the elevation is over thirty or thirty-five feet. Our experience in this state, and the experience of the experts of the Bureau of Fisheries and fisheulturists in Oregon and Washington, confirm this statement.

There is a great protest being made by the people of Oregon and the Bureau of Fisheries against the construction of a dam ninety feet in height across Priest Rapids on the Columbia River, which confirms our opinion stronger than ever, that where the people have a stream of such value as the Columbia or Klamath rivers, no high dams should ever be allowed to be constructed if the fishing interests are to be considered. The people are entitled to at least one stream in each state from which they can collect an adequate supply of both salmon and trout eggs to supply the depleted waters of other regions.

The statement made that the Fish and Game Commission is retarding the industrial growth and development of the state by opposing these high dams is, in our judgment, not a fact, as there is sufficient energy being developed in other streams of California, where it is possible to construct power plants, to furnish the entire northwestern part of the state without embarrassing the development of that region or any other portion of California.

FISH PROPAGATION.

Applicants, without exception, are reporting fine results from previous plantings of fry and are continuing making applications from year to year, thus keeping the streams as well stocked as the conditions will permit where the fishing is so excessive as it has been for the last few years. The zeal and enthusiasm shown by the applicants who, year after year make applications to stock their favorite streams and lakes, is evidence of the intense interest in the fisheultural work in this state. The growing interest in the propagation and planting of trout fry is the result of good returns that we are producing by the cooperation of the persons planting fish for the Fish and Game Commission.

The distribution of trout fry by the sportsmen's clubs, boards of supervisors, and other interested parties, continues with the same enthusiasm as in former years. The public spirited citizens in the different communities have devoted their energy and furnished their labor in seeing that the trout fry are properly distributed. Each season we find better results of this cooperation as the persons interested in trout planting become more familiar with the proper distribution of the fry.

Some sportsmen's clubs, assisted by the supervisors of the counties, have established resting pools at the end of the auto roads where the fry are deposited and given a few days' rest before being carried by pack animal to the more inaccessible lakes and streams in the higher altitudes. The Fresno County Sportsman's Club and the Madera Rod and Gun Club have built a number of these resting pools in the mountainous districts where they are making their distribution of fry and have obtained excellent results. This is very commendable work as it gives the fry a chance to recuperate before continuing the long journey to the lakes and streams that are not accessible by trucks or wagons and have to be reached by pack animals. These resting pools are of great benefit if the fry are not held in them too long. A great many persons have advocated the holding of trout fry until late in the fall in ponds and nurseries along the streams where they desire to have the fish distributed, believing that if the trout fry are held until they are a larger size than when received from the hatcheries, better results could be obtained. Our experience has led us to believe that this is not a fact; and when trout are confined in ponds or nurseries they generally become large, fat and domesticated, lose their wild instinct of natural preservation that they have when first taken from the hatchery and a greater number of them will be destroyed by natural enemies, if held until late in the fall or the following spring, than if liberated as soon as they are swimming up and in condition to plant directly from the hatchery.

There are probably some places where larger trout might be of benefit when planted than those taken from the hatchery, but these places are very remote and in general trout planting, our experience has demonstrated to us, the sooner the trout fry are planted, the better the results.

TROUT DISTRIBUTION.

The total distribution of trout fry from the different hatcheries in the state for the biennial period 1922–1924 was 56,527,105, consisting of the following species:

Rainbow	21,696,365
Loch Leven	10,876,350
Steelhead	13,011,300
Eastern Brook	5,106,550
Large Lake	2,119,950
Black Spotted	816,090
Brown Trout	2,564,550
Cutthroat	255,950
Mackinaw	80,000
Total	56,527,105

On the date this report is being written, July, 1924, we have approximately 28,000,000 trout fry that will be distributed as a result of this season's operations.

SALMON.

To maintain even a fair supply of chinook, or king, salmon in the Sacramento River, Klamath River and Monterey Bay regions, as well as Eel River and ocean areas fed by this stream, becomes a greater problem each year. With the cutting off of natural spawning grounds by high dams in the tributaries of the Sacramento River and the depletion of Eel River by the excessive fishing of a few years ago, the

supply of salmon eggs to a great extent must be supplied from the Klamath River. During the seasons of 1922 and 1923, owing to the low water and seasonal conditions, the Bureau of Fisheries at Battle Creek and Mill Creek did not have any surplus eggs to furnish any of the California Fish and Game Commission's stations.

During the fall of 1921 there were collected at Klamathon egg-collecting station on the Klamath River 19,178,000 eggs. These were hatched and the resulting fry distributed as follows:

Sent to Fort Seward, fall of 1921	2,000,000
Planted in the Sacramento River, 1922	7,311,000
Planted in Fall Creek, spring, 1922	2,331,000
	11,642,000
Planted in Klamath River, fall, 1922	5,000,000
Planted in Fall Creek, fall of 1922	1,000,000
	17,642,000

During the fall of 1922 there were collected at Klamathon egg-collecting station on the Klamath River 20,824,000 eggs. These were hatched and the resulting fry distributed as follows:

Sent to Fort Seward Hatchery	2,250,000
Planted in Sacramento River	12,089,000
Planted in Del Norte County	40,000
Planted in Fall Creek	3,550,000
	17,929,000

The season of 1923 opened very propitiously for the collection of chinook salmon on the Klamath River. The opinion of our superintendent, Mr. G. H. Lambson, and his assistants, was that an equal number of eggs would have been taken, if not a greater number, than during the season of 1922, but, during the fore part of October when the pools were full of salmon between the racks and ready to be spawned and their eggs ready to be collected for our hatcheries, the California-Oregon Power Company opened their sluice gates on the big Copco Dam without giving our employees any warning of the danger that threatened our racks at Klamathon, and caused a great flood of water to descend the river which overflowed the racks and choked them up with debris, logs, brush and other detritus so that the spawning salmon escaped up the river, and, as the tributary streams between the racks and the Copoc Dam were too low for any considerable number of these salmon to spawn, a great number of the eggs carried by these spawners was lost in the river between Klamathon racks and the Copco Dam.

The Company's attention was called to this damage and they agreed not to open their flood gates again without giving the Commission due notice, and at no time to open them to such an extent as to cause damage to our egg-collecting station. This damage to the season's work is to be regretted as every salmon egg that can be collected and hatched is necessary to maintain even a fair supply of salmon in our rivers and ocean area.

During the fall of 1923, 4,041,000 salmon eggs were collected, 250,000 of which were sent to Fort Seward Hatchery for distribution in Eel River. The remainder will be held in the ponds and planted this fall, the statistical report for which will not appear until the next biennial report of the Commission.

For years we have called the attention of the public and the legislature to the rapidly decreasing salmon supply in California with recommendations given in former reports, but, to date, no particular effort has been made to save this valuable fish from being greatly depleted, if not practically exterminated.

In a last effort to save this valuable fish to the people, the Fish and Game Commission, assisted by the people of Siskiyou County, and other districts, initiated a petition to submit to the voters on the November, 1924, ballot the decision whether we are to lose the Klamath River, the last stream that is not affected by high dams, and from which salmon eggs can be collected in any considerable numbers. The upper reaches of Eel River have been cut off by high dams and the uncertainty of the flow of water in Eel River caused by the great extreme between the maximum and minimum flow of the river makes Eel River one that cannot be depended on as a salmon egg-collecting stream; therefore, our efforts must be confined to saving the Klamath River as an egg-collecting stream for king salmon as we do not desire to see this valuable food fish practically exterminated in this state in the next few years.

We refer again to the closing sentence in our report on king salmon in the biennial report of 1920–1922: "The Fish and Game Commission is waging an uphill fight when it comes to conservation as the people do not realize the destruction of wild life until it is too late." Recommendations to conserve our fish and to increase the output of our hatcheries by practical and scientific methods go unheeded.

We can do nothing but reiterate the above sentence as practically the same condition prevails today as two years ago regarding the practical measures to save the fish in the Klamath River, with the exception that the measure will come before the people for their consideration. If they do not desire to see this valuable food fish practically exterminated, they will have a chance to prove it at the November election.

MOUNT SHASTA HATCHERY.

The high standard of work at Mount Shasta Hatchery has been maintained during the season of 1922 and 1923 the same as it has since the establishment of this station. Mount Shasta Hatchery has been operated to its full capacity during this period and 24,440,000 salmon fry and 27,994,450 trout fry were hatched and distributed from this station. This is one of the best equipped stations in the country, but it has practically reached its capacity for pond culture and for increased hatchery operations as we have not sufficient water or land to increase the capacity of this station. Therefore, pond systems must be established, as previously mentioned in this report, to enable us to collect a larger number of trout eggs to supply the other hatcheries now in existence and those that are to be established.

There were collected from the ponds at Mount Shasta Hatchery during the season of 1922–1923, 18,428,000 trout eggs. This number, with the additional eggs from outside stations, gave us a grand total of 27,994,450 fry to be distributed throughout the state.

The more important improvements made at this station since June 30, 1922, are as follows:

A concrete settling tank, which is also used for the diversion of water to the different hatcheries, was constructed, the dimensions of which

are 36 feet long, 8 feet 10 inches wide, and 5 feet deep, with walls 8 inches in thickness, and concrete foundation.

A new flume, 250 feet long and 14 inches by 16 inches, was built from the main supply ditch to hatcheries C and D. A number of the ponds were relined with new plank and inlets and outlets to six of the ponds were renewed. The ditch was enlarged west of the hatchery ground to make an additional fry pond. New screens were installed in all the hatchery troughs during the period covered by this report. Drain pipes were placed under the roads in front of Hatchery A. A new drain from Hatchery A to Pond No. 8 was installed. A new room was built in the attic of the foreman's dwelling and other improvements to keep the station in repair, but just enough repair work was done to prevent damage to the system of ponds and hatcheries so that they could be operated.

A number of improvements recommended to be constructed during the coming biennial period are as follows:

A new food preparation room, refrigerating plant and cold storage rooms for keeping the fish food in good condition. A new building should be constructed to be used as a storage room for fish cans and a paint room. This should have a steam boiler installed for steaming the cans, keeping them sanitary, something essential to keep the fish in good condition.

One new corrugated drain pipe to take water from Hatchery A. One galvanized drain to cross the road under the lane in front of Hatchery A, as the present culvert is in bad condition.

All the ponds, except two, should be relined with planking, in whole or in part. The planking on these old ponds and walls should be renewed, as they have been in use from 15 to 25 years. The superintendent's and foreman's cottages should be repaired; a concrete bridge constructed over the inlet of pond system on the road leading across the hatchery ground to barns and garage. These are only a few of the many improvements that are necessary to keep this important station in repair.

An additional water supply should be furnished to this station if it is to be operated to its fullest capacity, as the drought has affected it several times in the past; also, the water owners are using water from Spring Creek, from which this station receives its water supply, and take their usual amount regardless of the seasonal conditions, and the hatchery suffers accordingly. When the irrigation period was on this spring, the farmers diverted so much water that there were times when the fish in the hatchery, as well as in the ponds, were in danger of suffering materially, if not perishing, for want of sufficient water supply. A meeting was called at Sisson on May 20, 1924, and the water users diverting water above Mount Shasta Hatchery agreed to turn back from their ditches sufficient water to maintain the hatchery until seasonal conditions would bring about a larger flow in Spring Creek. This we greatly appreciated, as it prevented serious loss and damage to the fish at Mount Shasta Hatchery.

The auxiliary stations under the supervision of Mount Shasta Hatchery were operated during the last biennial period to their fullest capacity. These stations are Fall Creek Hatchery, Klamathon egg-collecting station, Hornbrook egg-collecting station, Bogus Creek egg-collecting station, and Camp Creek egg-collecting station.

KLAMATHON EGG-COLLECTING STATION.

There have been no improvements made at this station during the last two years other than the necessary repairs to keep the racks, traps, and station generally in condition for the catching of salmon and the taking of their eggs. There will be no improvements required at this station for the next two years. There were collected at this station 26,586,000 chinook salmon eggs, as follows: In the fall of 1922, 20,824,000; in the fall of 1923, 5,762,000. This take would have been at least ten million greater if it had not been for the disastrous flood that came down the river caused by the opening of the gates of the big Copco Dam.

FALL CREEK HATCHERY.

This station continues to be successfully operated. Since our last biennial report no improvements worthy of mention have been made; but recommendations for improvements are necessary at this time, as the hatchery troughs that were installed in this hatchery in 1918, at the time of its construction by the California-Oregon Power Company, were of poor material, being mostly soft pine which has decayed and become spongy to such an extent that we do not consider them any longer safe for the rearing of fish. We recommend the placing of an entirely new set of troughs in the Fall Creek Hatchery, made of a well-seasoned redwood; a new flume from the settling tank to the hatchery; a new floor in the hatchery, as the old floor has become badly rotted, owing to the leakage of these poorly constructed troughs; and the painting of the interior of the building. As the interior of this building has never been painted, the ceilings and walls are deteriorating very rapidly. The construction of another salmon-rearing pond is also recommended at this station so that a greater number of salmon fry can be held until the proper time for distribution.

HORNBROOK EGG-COLLECTING STATION.

There have been no improvements since 1922 at this station and there will be none for the next two years. The take of eggs at this station was below the average, owing to the prevailing drought for the last two years. The total number of eggs taken were 3,733,000.

BOGUS CREEK EGG-COLLECTING STATION.

This station was well repaired two years ago and no improvements will be necessary for the next two years except the extension of a concrete apron under the racks. The take of eggs at this station was approximately the same as normal for the last two years, as the drought did not affect these streams as greatly as it did Hornbrook Station. The take of eggs for the last two years was: In 1922, 4,336,000; and in 1923, 2,495,000.

CAMP CREEK EGG-COLLECTING STATION.

This station has not required any improvements for the last two years and none will be needed for several years. This station continues to furnish a large supply of rainbow trout eggs and will be one of our best stations until the seasonal rainfall is normal. The total take of eggs for the last two years was: In 1922, 2,356,000; and in 1923, 2,102,000.

MOUNT WHITNEY HATCHERY.

Mount Whitney Hatchery has been operated to its full capacity during the last biennial period, and we would respectfully recommend that a new hatchery of equal capacity be established on the Mount Whitney grounds, or a new station established in the Mono-Alpine region, so that a greater number of trout fry could be produced in this section of the state. There are also several possible sites on other streams in the Owens River Valley, but the Los Angeles aqueduct has taken over the greater portion of these, so it is doubtful if sufficient water could be obtained for the installation of another hatchery in this section. The increasing demands for fish in southern California and the region consisting of Inyo, Mono and Alpine counties, must be supplied from a source where eggs can be hatched and the fry distributed within the shortest distance for transportation. In all probability, we will be able to recommend to the board within the next year the selection of a site in either Mono or Alpine counties where a hatchery could be established that would relieve the heavy demand on the Mount Whitney Hatchery, thus allowing the output of this hatchery to be shipped to southern California.

During the spring of 1923, meetings were held in Independence with the other users of the water from Oak Creek, from which is obtained our supply of water for Mount Whitney Hatchery, and an amicable adjustment was made of the amount of water to be used at this station for the propagation and rearing of fish, as well as the amount to be used on the lawns and flower beds. Mr. Gordon Zander, of the Division of Water Rights, kindly assisted in bringing about this adjustment. The amount of water for the use of the hatchery grounds, lawns, and flower beds, was measured and the amount determined that the state should use for this purpose, which was agreeable to the other users of water from Oak Creek.

COTTONWOOD LAKES STATION.

This station was last operated in 1920. Owing to the large take of eggs which filled our hatcheries to their capacity during 1921, 1922 and 1923, the Cottonwood Lakes Station was not operated. In the spring of 1924, at the request of a number of prominent sportsmen in southern California, we planned to open this station for the collection of golden trout eggs for distribution in barren lakes, and, also, in some of the lakes in which golden trout had been introduced several years ago in the Mono-Alpine region, and in which they are now thriving wonderfully well. Upon the arrival of our crews at this station at the time the golden trout are usually entering the tributary streams of these lakes to spawn, our men found these streams practically dry owing to the extreme drought which has prevailed over the entire coast. The traps were installed in the creek flowing between the upper and lower lakes and 460,000 golden trout eggs were collected. These were hatched and will be distributed in the lakes suitable for this species of fish this coming fall.

RAE LAKES STATION.

The Rae Lakes egg-collecting station was not operated during the spring of 1922; but, owing to the shortage of eggs at other stations, was operated again during the spring of 1924 and the 410,000 eggs collected were transferred to the Mount Whitney Hatchery and the resulting fry will be distributed from that station.

TAHOE HATCHERY.

The new Tahoe Hatchery building was completed during the fall of 1920; but since then we have not been able to construct the foreman's cottage, food preparation room and other outbuildings, or improve the grounds as they should be to be in keeping with this fine station. This we hope to be able to do within the next year. The water system furnishing the water supply to this hatchery should be remodeled and open flumes constructed from the springs to the settling tanks, as well as ponds for a considerable area around the springs from which this water supply has its source, in order that the water will be more fully aerated and given a chance to reach a higher temperature. The water in these springs is very cold and conducting it through pipes does not give the sun's rays a chance to warm the water to the proper temperature for rapid development of trout fry. The water is very pure and cold and the fry do remarkably well, but their growth is retarded by the low temperature of the water. We deem it advisable to have open flumes with ripples so arranged that the water will receive a higher degree of aeration than is possible in passing it through the pipes, as well as giving it the benefit of the sun to raise the temperature.

There were produced from this hatchery during the last two years 2,935,000 trout fry, as follows: In 1922, 975,000 rainbow trout, 480,000 black spotted trout, 100,000 steelhead trout, and 145,000 large lake trout; and in 1923, 445,000 steelhead trout and 790,000 large lake trout.

MOUNT TALLAC HATCHERY.

This station has been operated during the last two seasons under the same conditions that have prevailed during former years. We are always compelled to plant the fry quite early owing to the rise in temperature of the water in Fallen Leaf Lake, from which this hatchery receives its supply. After the warm weather sets in the temperature rises and the water moulds and algal growths have a deleterious effect on the fish, which necessitates planting earlier than we otherwise would. However, the fish are planted in good condition and, as the water is warmer from the beginning of the season than it is at some of the other stations, the fish attain a good growth by the middle of July, so at that time they can be planted and good results expected. We would recommend the installation of a new floor in this hatchery, as well as an entire new set of troughs and distributing tanks and other fixtures incident to the hatchery equipment. The old equipment is now so badly decayed that it is not safe for any further use in the rearing of fish. This work should be done during this coming fall as soon as the trout fry are out of the building.

Traps were operated in Blackwood Creek, Ward Creek and Taylor Creek during the seasons of 1922 and 1923 and eggs collected as follows:

In 1922—	Taylor Creek	205,000
	Blackwood Creek	215,000
	Ward Creek	180,000
		600,000
In 1923—	Taylor Creek	515,000
	Blackwood Creek	590,000
	Ward Creek	640,000
		1,745,000

To insure the safety of these traps during seasons of heavy snow fall when the melting snow causes flood conditions, concrete toe walls should be constructed across the beds of these creeks, as well as concrete cribs placed in the streams to support the chords in the trap frame. This would insure us against any accidents which might be caused by flood waters in these creeks.

UPPER TRUCKEE RIVER EGG-COLLECTING STATION.

The same condition prevails at the Upper Truckee River egg-collecting station, and this station should be improved by a concrete abutment on the side of the creek, as well as cribs and concrete toe walls or aprons across the creek bed to prevent the traps from washing out when streams again are normal, thus insuring the safety of all of these traps. There were collected from this station 200,000 eggs during 1922.

UKIAH HATCHERY.

During the season of 1922 this hatchery was operated to its capacity, but no improvements were made until the winter of 1922–23 as it was necessary to procure a new lease on this property from the town of Ukiah. After procuring a lease for a period of five years from the trustees of the town of Ukiah, beginning January 21, 1924, we made repairs to this hatchery. This property was received from the Northwestern Pacific Railroad Company many years ago when the railroad company, in conjunction with the Fish and Game Commission, operated this hatchery for a number of years. Since the railroad company ceased to operate this hatchery it has been operated by the Fish and Game Commission under a lease from the town of Ukiah. No great amount of money was expended on the repairs—just enough to keep the station in good condition. A new pipe line was installed to furnish the water supply, as the amount of water at this station is limited and any leakage from the old flume caused considerable damage to the hatchery operations. During the spring of 1924, owing to the shortage of water, a limited number of eggs had to be placed in this station, and, as the drought prevailed through the sections that are usually planted from this hatchery, some fry were hatched to supply all of the streams in this section and an early distribution made. The following number of fry were hatched during the last two years: In 1922, 962,500; and in 1923, 1,015,000.

SNOW MOUNTAIN STATION.

At this station 1,594,000 eggs were collected in 1922 and 2,857,960 in 1923, and the resulting fry hatched in the Ukiah hatchery and other stations of the Commission. Owing to the shortage of water in the South Eel River during the season of 1924, the station was not operated. Preparations were made during the winter to operate this station the same as in former years, but the Gravelly Valley Dam held back the water in the South Eel River, thus preventing a sufficient flow of water to reach the Cape Horn Dam, at which place the Snow Mountain egg-collecting station is located. There was not sufficient water passing this dam at any time to enable the steelhead trout to ascend this branch of the Eel River so the eggs could be collected. The drought that prevailed throughout this region was probably greater

than in any other area of equal proportion in the state, considering the rainfall that usually prevails in this section. The main Eel River was very low all through the winter and spring and very few steelhead ascended as far as Dos Rios, and as this is at the junction of the South Eel and the middle fork of the Eel, the water in each branch was lower than the points below, so that very few fish entered either the South Eel or the Middle Eel and none reached the egg-collecting station as no water passed Cape Horn Dam during the period the fish were ascending the river.

FORT SEWARD HATCHERY.

This station has been successfully operated during the last two seasons. The fry produced have been fine, vigorous specimens of fish, showing good care and skillful handling of eggs and fry at this station, which is a difficult station to operate, owing to the uncertainty of the water during periods of drought. No great improvements have been made during the last two years, but we recommend that the following improvements be made this coming fall as soon as the trout fry are distributed: Sixty new standard troughs to be installed in place of the old shallow troughs that have been in use a great many years (the sixty old troughs were shipped from Price Creek Hatchery which was abandoned in 1916 and installed in the Fort Seward Hatchery after they had given service at Price Creek Hatchery for a period of fifteen or sixteen years). These troughs are now so decayed and spongy that they are no longer safe for the rearing of fish. New underpinning for the troughs; new distributing tank; waste flume; repairs for the old foundation of the hatchery; new settling tank; new head box in Powers Creek pipe line; and a new floor in the hatchery aisle are all repairs necessary to be made this coming fall before the salmon eggs are ready for shipment to this station. As this hatchery must supply the trout fry for the region covering northern Mendocino County, Humboldt County, and western Trinity County, it is very essential that this station be kept in the best possible condition so an adequate number of fry can be hatched to supply the ever growing demand for fish in this section. This hatchery, like all others in California, during the season of 1924 did not turn out as many fish as in former seasons, owing to the drought which prevailed. The total number of fry distributed from this station during the two seasons just past is as follows:

In 1922—	Salmon	1,997,430
	Rainbow trout	294,280
	Steelhead	425,000
	Black Spotted	146,000
	Large Lake	71,690
	Cutthroat	99,690
		1,036,750
In 1923—	Salmon	2,177,120
	Rainbow trout	667,560
	Steelhead	1,940,000
	Large Lake	98,260
	Cutthroat	156,260
		2,862,080

BROOKDALE HATCHERY.

All of the steelhead eggs collected at the Scott Creek Egg-Collecting Station were transferred as usual to this station during the last two years, and from there distributed to the other hatcheries and the usual number of fry hatched for Santa Cruz County. Owing to the increasing demand for water from Alba and Clear creeks, which supply the summer residents who have cottages at Brookdale, and the drought which has prevailed in this section, and other causes, we deem it advisable to buy an additional piece of land at Scott Creek station where the state already owns the ground where the egg-collecting station is located, and construct a new building to hatch the fry for the district comprising Santa Cruz, Monterey, Santa Clara and San Mateo counties. An ample supply of water can be obtained from Big Creek to operate a hatchery approximately twice the size of the Brookdale Hatchery, which is necessary to supply this section of the state. The fry can easily be distributed from this station to the railroad at Davenport, as well as by truck to the main line at Santa Cruz. The county board of supervisors of Santa Cruz County have rendered every assistance possible to make Brookdale Hatchery a success and are cooperating with us to secure a hatchery site on Big Creek for increasing the production of fry for that section of the state; and we hope by the time this report is published that we will have the site secured and be able to submit plans for the construction of a new hatchery on this proposed site. The hatchery at Brookdale is rapidly decaying, as the building is quite old and the troughs, tanks, and even the foundation would have to be rebuilt if the station is run longer than another season. We do not deem it advisable to construct a new station on the old site and recommend the construction of a new hatchery on Big Creek, a tributary of Scott Creek. The land held under lease at Brookdale could be held and the small ponds used for the rearing of trout fry when the surplus fry from the main station at Scott Creek would cause us to look for more room than the hatchery would furnish. The small ponds might be put to good use by the county in holding their fry until they were ready to make the distribution.

The total number of fry distributed from Brookdale during the seasons of 1922 and 1923 is as follows: In 1922, 859,000; and in 1923, 850,000.

SCOTT CREEK STATION.

This egg-collecting station has been holding its average up to the present time. The flow of water at this station has been interfered with by the appropriation of water from this stream by a Mr. Widemann, who filed an application with the Water Commission to divert a portion of the water from this stream for use on lands adjacent to Scott Creek. We protested the matter to the Division of Water Rights and are now awaiting an adjustment of the water supply which we desire to remain in this stream so that the fry will have ample water in which to maintain themselves during the summer months before descending to the ocean. This is very essential if Scott Creek is to be operated as an egg-collecting station and spawners, or adult fish, maintained in this stream. We are of the opinion that an amicable adjustment of the amount of water can be obtained and that there will not be any serious trouble with the pumping plants established by Mr. Widemann.

CLEAR CREEK HATCHERY.

The Clear Creek Hatchery and egg-collecting station has been successfully operated during the last two years. During the spring of 1922 we had the usual run of fish in Clear Creek, a tributary of the Hamilton branch of the Feather River, from which the fish come that furnish the eggs for this station. There was also a good run in 1923. There was a larger run of fish than usual in the Hamilton branch of the Feather River in the spring of 1924; but, owing to the low condition of the water in the Hamilton branch caused by the drought, and, also, by the diversion of the water by the Red River Lumber Company to their power plant, we had considerable difficulty in collecting eggs. However, 3,100,000 eggs were collected this spring (1924). During 1922, 1,683,000 eggs were collected and in 1923, 2,100,000 were collected, making a total for this station for the biennial period of 1922–23 of 3,783,000. A two-room cabin was built for the crew in the fall of 1923 and some additional troughs installed in the hatchery. Improvements were made to the traps and fish holding tanks. This hatchery should be enlarged as soon as funds are available as it is necessary to hatch a greater number of eggs to maintain the supply of fish in the streams and lakes of this region.

WARNER CREEK TRAP.

Owing to the exceedingly high water in Warner Creek, this station was not operated in the spring of 1923. During 1922 1,905,000 eggs were collected; and, owing to the low condition of the water in 1924, it was successfully operated and 2,892,000 eggs were collected. Improvements were made in the fall of 1923 at this station by repairing the traps and flume and adding sixteen feet to the fish holding tank. A small eyeing station of six or eight troughs should be installed at Warner Creek so as to hold the eggs until they are advanced far enough to ship to other stations. It is quite difficult in the early spring, when the snow is deep in this section, to transport the eggs from this station to Domingo Springs station where they are hatched. The mouth of the creek, where it has its confluence with Rice Creek, should be widened and a permanent crib installed so the racks can be moved to this point, a more suitable place than the place where they now are.

DOMINGO SPRINGS STATION.

This station has been in operation the last two years with its usual success. In the fall of 1923 a new flume was built to furnish the water supply for the hatchery and the fish-holding tank. As soon as funds are available, this station should also be enlarged so as to increase its capacity to at least double what it is at present as more fry are needed each year to supply the lakes and streams in all sections of the state wherever hatcheries are located. To properly handle the situation in this section, a permanent rack, or rolling dam, should be placed across the north fork of the river below the junction of Rice Creek and Warner Creek and a permanent station established. This would cost several thousand dollars, but the results that would be obtained would justify the expenditure as the work could all be concentrated at the one station and a great many more fish caught, and eggs procured that are now deposited on the spawning beds below Warner Creek and between the mouth of Warner Creek and Domingo Springs station.

These small traps and egg-collecting stations have been built because we did not have the funds to concentrate our work. The initial expense of installing the large stations was too great for the funds furnished our department. Whenever funds are available for this improvement work, the benefits to be derived from the establishment of permanent traps, larger stations, and better equipment, will result in a larger output of eggs for less cost per thousand after the initial expense of establishing the station has been made.

JOHNSVILLE EXPERIMENTAL HATCHERY.

The Johnsville Experimental Hatchery was operated for two seasons. Owing to the great depth of snow and the inconvenience of getting eggs to the station in early spring, it was deemed advisable to select a more favorable site. During the spring of 1922, when our men arrive on the ground to begin operations, the snow was from 12 to 15 feet deep on the level, with great masses on the slopes of the adjacent mountains, threatening to come down in the shape of an avalanche at any time. The work of shoveling out the snow and opening the station was an arduous one and fraught with great dangers. As soon as the distribution of the fry was over in the fall of 1922, arrangements were made to move the flume, tanks and other material to a new site located on the property of Mr. W. A. Adams, on Haskell Creek, a tributary of Sulphur Creek, near Clio, Plumas County, in a locality where the snow does not fall so deep, and several miles nearer the railroad than the site on Jamison Creek. In the spring of 1923, after procuring a lease from Mr. Adams for 25 years, a foundation was laid for the support of 40 hatchery troughs. The water at this new site was thoroughly tried out last season and during the spring of 1924. It proved to be of superior quality for the rearing of trout fry. We would recommend that a permanent hatchery building and station be established on this site, as it is the best site so far found anywhere in the immediate vicinity of the Western Pacific Railroad in the Feather River region. During the last two seasons 877,380 rainbow and 857,000 steelhead trout fry were distributed from this station in the lakes and streams of the Feather River district.

BEAR LAKE HATCHERY.

The Bear Lake Hatchery is situated in the San Bernadino Mountains, in San Bernardino County, at Green Spot Springs near the shores of Bear Lake, and, as usual, has been successfully operated during the last two seasons. During the season of 1922, 1,365,000 eggs were collected at the North Creek Egg-Collecting Station on Bear Lake and transferred to this station for hatching and distribution. It was also operated in the spring of 1923 with practically the same success as in the previous year and 1,100,000 eggs were collected. This spring (1924), owing to the light snow fall and the lowering of the lake by the water company, it was more difficult to procure the eggs than in former seasons; but there appear to be as many trout in the lake as at any time during the last five or six years. As mentioned in our report of 1920–22, black bass were thought to have been introduced in this lake, but we were somewhat in doubt at that time. The fact is now well established that thousands of this species of fish are in the waters of Bear Lake and are increasing annually as there is a great

abundance of food in the waters of Bear Lake—probably greater than in any other lake of equal area in the state—consisting of all native aquatic insects, as well as gammarus and minnows. There is an abundance of food to last for several years to come and the bass will not prey on the trout to any great extent until this supply of food is greatly reduced by the increasing numbers of bass. By holding our trout fry until late in the fall when the bass have left the shallows to return to deep water and become torpid, the trout fry can be released and will have a fair chance of maintaining themselves in goodly numbers for a great many years, or until such time as the bass have destroyed the abundant supply of insects and minnows and begin to devour their own young, as well as the trout. But until such time as this condition prevails, we shall continue the operation of Bear Lake Hatchery, as the trout fishing during the spring of 1924 was exceedingly good and promised to hold out during the entire season. As the period of the year during which bass will bite is very short, and as they do not furnish as good a game fish for the anglers as do the trout, and as there are so many lakes and streams in lower altitudes where the water is too warm and full of organic matter for trout to thrive, it is to be deplored that bass were ever introduced into this lake by thoughtless persons for reasons best known to themselves.

NORTH CREEK EGG-COLLECTING STATION.

This station is located on the shores of Bear Lake. During the last two years the bulk of the eggs furnished the Bear Lake Hatchery were collected at this station. The total number of eggs collected was 3,611,000. Of this number 1,150,000 were hatched and distributed from the troughs where they were hatched after the other eggs were eyed and shipped to the main hatchery at Green Spot Springs. Temporary repairs to the traps and tanks were made at this station in the spring of 1922, as they were damaged in the winter by the flood waters that came down North Creek. The repairs necessary to be made at this station to maintain it for several years longer are to repair the roof by replacing it with an iron roof; the general overhauling of the hatchery troughs; and improvements to the trap and tank system. This work should be done during this coming fall.

GROUT CREEK TRAP.

Grout Creek station was damaged in the spring of 1921, in fact, it was entirely washed out and carried down the stream. There has been no water in this creek since that time to justify the expenditure of any considerable sum of money to install a permanent trap; but, if there should be a heavy snowfall in the watershed of this creek, it may, in all probability, be well to install a permanent trap to catch the trout that ascend the stream during the spawning period. The stream rapidly subsides after the snow is through melting, and if the fish are not caught and the eggs collected, a great many of them, in fact, the largest percentage of them, perish on the sand flats at the mouth of this creek or are caught in the pools above the sand flats near the shores of the lake when the water recedes; therefore, it would justify the expense of installing a fairly good trap to catch these fish and collect their eggs and to prevent the loss of the breeders that are stranded when the water dries up in the stream.

METCALF CREEK TRAP.

This station is located on the shore of Bear Lake. During a season of normal rainfall this trap produces a fair number of eggs; but the take for the last two seasons was considerably less than in former years, owing to the small amount of water in the stream as well as to the blocking up of the mouth of the creek with sand bars. Considerable improvements can be made there to better the conditions at this small auxiliary station.

WAWONA HATCHERY.

Wawona Hatchery has been successfully operated during the last two seasons with the same good results as in former years. The total output of this hatchery during the biennial period of 1922–1924 was 389,300 steelhead and 498,200 rainbow trout fry. This station should be maintained as it is located on a site where it is easy to get the fry to the lakes and streams south and east of the Yosemite Valley. A cabin for the foreman should be built on the hatchery grounds this coming spring so that better protection could be given the plant during the time when the building is closed. Under the present arrangement, the foreman lives in a tent and the accommodations are not very good.

KAWEAH HATCHERY.

Kaweah Hatchery has been operated for the last five years under a tent and it is time that a permanent building be erected either on the present site or on a site in the Sequoia or General Grant National Parks. The improved roads, constructed since this hatchery site was first selected, cause us to believe that a more favorable site may be found in the Sequoia or General Grant National Parks; and a survey will be made in the near future to determine whether a better site may be selected. If the same can be found, recommendations will be made for the erection of a permanent hatchery in this section. If a new site can not be procured that affords better opportunities than the present site, we recommend that a permanent building be built on the present site. In the spring of 1923, to accommodate a larger output of fry, ten extra hatching troughs were installed in this hatchery, making twenty in all. This is not large enough to supply the district that is making requests for fish for Sequoia and General Grant National Parks, Tulare County, Tulare River, and lakes in the southern high Sierras. A hatchery with a capacity of at least sixty troughs should be built for this section. The total number of fry distributed from this station was as follows: In 1922, 435,000; and in 1923, 440,000.

BIOLOGICAL SURVEY OF LAKES AND STREAMS.

In an effort to improve the methods of stocking the barren lakes and streams of the high Sierra range, we recommend that a biological survey of the streams and lakes of the Sierra range be made and plans to stock this entire region be carried out as rapidly as money and fish can be had for this purpose. The region of the high Sierra range contains many thousands of lakes and streams that are barren of fish life. This region should be stocked with species of fish best adapted to the physical conditions of the streams and lakes as regards temperature, altitude and aquatic insect life. Many of the higher lakes of this region, particu-

larly the smaller ones, are residual glacial basins; and such should be stocked with a certain number of fry each season so that the people who are fishing these lakes will not have to depend on natural propagation, which is not feasible in some lakes as there are no tributary streams in which the fish may spawn, or springs welling up through the gravel near the shores in water not too deep for the fish to spawn. To determine the different species of trout best adapted to each individual lake, a biological survey should be made by some person specially trained for this kind of work.

The introduction of fish in these lakes without any scientific checking up of the physical conditions to determine the species best adapted to each lake would, in many instances, be a waste of time and money. After a survey of the physical conditions of these lakes is made, proper aquatic plants and insects should be introduced to improve the food supply for whatever species of trout is best adapted to each lake or stream where natural food is found to be lacking. The planting of trout fry in barren waters should be done under a system based upon a scientific survey of conditions necessary to get the best results when the fry are introduced. The planting of adult fish in small numbers in these lakes is not the best method of introducing fishes into barren waters. As said before, a great many of these lakes do not have proper spawning grounds for the species to be introduced, and, where such conditions exist, fry should be planted in sufficient numbers to insure fishing within a short period of time after the fish are introduced. Whenever, upon examination, it is found that the lakes do not contain proper spawning grounds, a certain number of fry should be introduced annually, or at least every couple of years, to maintain the supply in these lakes, depending on the number of anglers who visit these lakes each season.

An experienced fish planter, with a well equipped pack train, should have charge of the planting of fishes in these lakes after the biological survey is made. This would not entail a very great expense and many hundreds of now barren lakes could be made to furnish good fishing to those who care to enter the high Sierra range for their summer outings, as the rivers and lakes in the lower altitudes are being fished so excessively by the ever increasing population of this state, and, with the advent of the automobile, it becomes necessary to stock these barren lakes to meet the demand made upon our waters by the angling public. Therefore, we recommend that this work be taken up and continued until all of the accessible lakes and streams are stocked. This work should be done under the auspices of the Fish and Game Commission and carried on systematically until all of the barren lakes and streams are stocked with species of trout adapted to the conditions best suited for their development. Some of these lakes may allow the successful introduction of the Montana grayling. When this survey is completed, recommendations will be made to the board regarding the species that will thrive best in each lake or stream.

SCREEN SURVEYS AND INSPECTIONS OF POLLUTION OF INLAND WATERS.

During the last two years surveys of screens and fishways, and inspections of the same, have been carried on the same as in former years.

Two hundred fifty-three inspections of screens have been made and instructions given to the owners to repair, improve, or reinstall the same, where they have been removed from the ditches. One hundred forty-two surveys were made for screens, 82 being for new screens and 60 being resurveys where the time had elapsed for the installation of the screens and same had not been installed. Forty-one large rotary screen wheels were installed during the past year. The screen surveyor has investigated a great many plans for the impounding of sawdust and mineral refuse in many places throughout the state. In nearly every case where the streams have been polluted by persons, the nuisance was abated as soon as their attention was called to the law.

A number of the larger corporations have not complied with the screen law, and these cases are not in the hands of our legal department for court action. It is recommended that these cases be pushed to a speedy termination, as it is very important that all canals, ditches, and pipe lines, taking water from rivers or streams where fish have been planted or may exist, should be screened at as early a date as possible. The legal department should be given every assistance that our funds will allow in prosecuting offenders who will not cooperate with the Commission in installing properly designed screens. A number of the larger corporations feel that they do not have to abide by the law, claiming that the cost of the construction of the screens is of a great deal more importance than the fish destroyed by passing through their canals into irrigated areas and through power wheels.

The honorable C. J. Luttrell, of the superior court of Siskiyou County, issued an injunction against the Parker Cattle Company for not installing screens in accordance with the plans submitted by this department. As soon as the injunction was issued, the company got busy and installed the proper type of screen. This action of the superior court of Siskiyou County is highly commended and should be followed in other cases pending throughout the state, as the action of Judge Luttrell in issuing this injunction has established the fact that those diverting water from rivers and streams must comply with the law and thus preserve the fish life. In most instances this can be easily done at a nominal expense.

FISHWAYS.

Our fishway survey and inspection service has been actively engaged during the last two years in inspecting fishways and making surveys where deemed necessary for the installation of new fishways. Plans for a number of new fishways have been served on different companies and individuals owning and occupying dams, rivers, and streams, who have not complied with the law. These, also, have been referred to our legal department and court action will be necessary in a number of cases to force the owners to comply with the regulations. The same is true of a number of fishways in different parts of the state that have been built for a number of years; but, which, during periods of low water, such as has prevailed during the season of 1924, have not functioned.

A great many owners of water rights have refused to allow any water to pass through the fishways, closing them entirely in defiance of the law which provides that sufficient water must be allowed to pass through fishways at all times to keep in good condition any fish life that may exist below the dam, and that during the minimum flow of water in any river or stream sufficient water must be allowed to pass each dam, culvert, or waste gate to maintain fish life. This provision of the law has been disregarded by a great many persons and corporations who do not consider that the fish destroyed are equal in value to the value of the water for other purposes. Such a small amount of water is necessary to maintain fish life below these dams that this law should be enforced strictly. If the provisions of this law are not drastic enough to compel persons who are diverting water from our rivers and streams to allow sufficient water to remain in the beds of the streams to maintain fish life, the law should be amended by the next legislature so as to maintain fish life. This is only fair to the people who are interested in the preservation of fish and enjoy the fishing that these streams afford.

RECOMMENDATIONS REGARDING WATER LAW.

We have asked in several of our former reports for the cooperation of the Division of Water Rights, formerly the Water Commission, in not granting an appropriation of water from any stream unless a sufficient amount is allowed to remain to maintain fish life during the minimum flow. But these recommendations have been disregarded; and whether the Division of Water Rights is compelled to give all of the water to those asking for it in defiance of the rights of the people who have a right to the natural resources of this state, its fish and fishing waters, is not for this department to say. However, we respectfully recommend that some action be taken by our state legislature to investigate these conditions; and if, in their wisdom, they agree with our idea that sufficient water should be allowed to remain in the bed of every stream to maintain fish life during the minimum flow, and if the present laws are not stringent enough to meet the situation, laws should be enacted that will preserve to the people at least a small portion of the water flow that formerly existed in our streams, so that the fishing in many districts will not be entirely destroyed. If the rights of the people are to be protected, action must be taken by the legislature to make the penalties for the violation of laws pertaining to fishing and minimum flow of streams more drastic. In no instance, in our opinion, is it necessary to divert the entire flow of any stream, thereby causing the destruction of fish life below the diverting point. If a small amount of water is allowed to pass each dam it will maintain fish life during the period of minimum flow and fish could be kept alive until the period of normal flow. The greed of water users is well known; and they do not regard the rights of any other persons or those who have an interest in fishing.

A number of our lakes have been tapped and the water drawn below the natural level of the lake to such an extent that the fishing interests have been greatly interfered with. Consequently it is also recommended that a law be passed preventing the tapping of any natural lake below its outlet. If it is necessary to take a greater amount of water from any lake than the regular discharge of the lake through its outlet,

dams can be constructed and the water level raised to impound the surplus water. This practice of tapping the mountain lakes to increase the flow in the outlet streams for power and other purposes will soon cause considerable damage to our fishing streams. Those who are capitalizing the water for power can well afford to construct dams to raise the water, if it becomes necessary to hold back a surplus supply for the low water period, instead of tapping the lakes and thus causing damage to our fish life.

Many other recommendations could be made on the subject of the preservation of the fish for inland waters; but, until some action is taken to regulate those who are taking water from our streams, we do not deem it advisable to make any new recommendations regarding the conditions that are detrimental to the lakes and streams of our state containing fish life.

Respectfully submitted.

W. H. SHEBLEY,
In charge Department of Fish Culture.

REPORT OF THE DEPARTMENT OF COMMERCIAL FISHERIES.

The Honorable Board of Fish and Game Commissioners of the State of California.

SIRS: In our last biennial report we told of the decline in the volume of California's fisheries products during the years 1920 and 1921 after a phenomenal growth of our fisheries which reached its peak in the year 1919. The most rapid growth was in our sardine fisheries, located at Monterey, San Pedro and San Diego, and the main stimulus was the export demand caused by the Great War.

In 1919 the sardine catch in California exceeded 150,000,000 pounds, nearly all of which was put into pound oval cans, the great bulk being for export. With the slump in prices in 1920 coupled with the collapse of foreign exchange most of our sardine canners were soon in distress. There was an overproduction of canned sardines in this country and foreign countries could not pay a price which would give our canners a profit. It so happened there was a good demand for fish meal and fish oil—the by-products of the sardine canning industry—and that more of a profit could be made by using the sardines for reduction purposes than by putting them in cans for food. As practically every fish cannery in this state has a reduction plant for handling the fish offal from the canning operations, the canners were naturally anxious to run these reduction plants to capacity.

The so-called Fish Conservation Act passed in 1919 prohibited the waste of fish or the use of any food fish except fish offal for reduction purposes without first obtaining written permission from the Fish and Game Commission. In the prosecution of the sardine canning industry there is an unavoidable waste of fish, such as broken and soft fish or fish too large or too small to pack properly. The fishermen frequently make over catches which it is impossible to avoid. The written permits to be issued by the Fish and Game Commission as provided in the law, were intended to cover these unavoidable contingencies.

The difficulty was in determining what was unavoidable waste, especially in the case of soft, broken and off-sized fish discarded by the fish cleaners in selecting the fish for canning. It was a comparatively easy matter for a canner to discard half of the catch in this manner to his own great advantage and it was difficult to prove it constituted unnecessary waste.

If a canner could make a sufficient profit on his reduction or by-products plant, he was able to cut down the price of his canned sardines to a point where they could be sold for export and thus he could find an outlet for the surplus production. The Fish and Game Commission whose duty it was to enforce the Fish Conservation Act had great trouble in doing so for the reason that the law did not adequately cover the emergencies which arose. It seemed desirable that the sardine canners be permitted to use a larger percentage of the catch in their by-product plants where the profit lay, in order that they might be able to dispose of their surplus canned goods at a low price in foreign markets, and thus be able to weather the storm until foreign countries could pay more, or until a better home market could be developed.

With this in mind, the canners and the Fish and Game Commission got together and had the act amended in the 1921 legislature. It was then provided in the act that the canners, if they wished to use food fish for reduction purposes, could make application to the Fish and Game Commission whereupon the Commission must hold a hearing for the taking of testimony and if it was shown that there was no other market for the fish and that using them in a reduction plant would not tend to deplete the supply, the commission could give permission to use an amount of fish for reduction purposes, of not to exceed 25 per cent of the capacities of the plants making application. Beginning with the fall season of 1921 the Fish and Game Commission has, under the amended act, given the sardine canners a definite percentage of the catch for reduction purposes, the percentage to cover everything not used for canning except the fish offal. Experience has proved that the amended act is no easier of enforcement than the old act. Even with an efficient corps of inspectors to watch the different canning plants it has been impossible to satisfy the law-abiding ones that unscrupulous canners are not getting an advantage over them for the competition is exceedingly keen not only between individual canners but between the different sardine canning districts. If a canner quotes a lower price than the others, it is believed by those who are unable to meet this low price that he could not do it unless he was using more fish in his reduction plant than the rules allowed.

There are too many ways in which the Commission's order, fixing the percentage which can be used for reduction purposes, can be avoided. In case of a violation of the order of the Commission, it takes too long to stop the offender.

The Fish Conservation Act should be redrawn and the hearings before the Commission eliminated. The amount of fish which it is legitimate to use for reduction purposes in the process of canning can be definitely fixed in the law. A violation of the law should be a high misdemeanor and the goods manufactured in violation of the law should be subject to seizure by the state.

There is no doubt but that the present law giving a more liberal amount of fish for reduction purposes has enabled many canners to survive, who would otherwise have perished, but there is also little doubt but that permitting a certain per cent of the catch to be used for reduction purposes has resulted in the lowering of the quality of the canned sardine pack. In order to get the fish for reduction purposes most of the canners have lowered the quality as well as the price of the canned pack. For the export trade price is what counts and the quality does not cut much figure. The quality of California canned sardines must be built up. We therefore recommend that the amount of sardines which may be diverted for reduction purposes be limited to what is absolutely necessary in putting up a good pack and that this amount be definitely fixed in the law.

In our last biennial report we said that the sardine industry showed decided signs of reviving during the winter season of 1921-1922. This revival was more marked in the two seasons which have passed since that time. The catch is again very near that of the banner year of 1919. Several of our sardine canning companies have failed and others no doubt will fail before the industry is again on a firm footing. But the crisis has passed and as soon as the industry can be freed from the demoralizing tendency to make profits out of the by-products plant and to sell the canned product below cost it is bound to have a healthy growth.

PURSE SEINE FISHERY.

The purse seine fishery of southern California was dealt with in our last report and our prediction that there would be a fight at the last legislative session against the use of purse seines was fully borne out. Those opposed to purse seines claimed they would eliminate them as a conservation measure, but we are not quite sure that the basis of the opposition was economic. It is the ancient objection to a new method or appliance which upsets the old order. The situation was investigated by Dr. Tage Skogsberg, one of our fishery assistants. Unfortunately, his report could not be published in time to be read at the last legislative session. It is possible that if it had been published and available, the measure eliminating purse seines would not have passed. As the bill was vetoed, the matter is soon to be brought up again. There was a good deal of misunderstanding amongst the legislators as to what were the real facts in the case. Since that time Mr. Will F. Thompson has written a condensed review of Dr. Skogsberg's report which was published in California Fish and Game, Volume 9, pages 87-98. This review and the complete report, which is now ready for the printer, should clear up the points at issue and enable the legislators to get a clear understanding of the situation.

The report points out the necessity of carrying on a biological investigation of the principal species of fish involved in the dispute, especially the barracuda. This investigation would be along the lines of the investigations now being carried out in the case of the tuna and sardine. As such an investigation is required by law, we hope to start the work as soon as finances will permit.

STRIPED BASS AND SHAD.

The last legislature passed measures which give striped bass and shad considerable added protection. During the last five years the annual commercial catch of these two species has gradually increased in spite of a number of restrictions on commercial fishing. It is quite certain that shad are becoming more plentiful and the closing of the last half of May to shad fishing in addition to the closed months of June and July may result in bringing them back to their former abundance.

Although the commercial catch of striped bass is increasing in spite of the added netting restrictions, it is not so easy to convince anglers that they are not actually becoming less plentiful or even scarce. Closing the last half of May to netting for striped bass, the same as shad, is a very good added protection and it is our opinion that the present laws are adequate for a few years at least.

SALMON.

The salmon, unlike the shad and striped bass, are not sufficiently protected against the drain of commercial fishing. Prior to the last legislative session, conferences were held between the salmon fisheries interests and the Fish and Game Commission and important restrictions were agreed upon which were designed to eliminate net fishing on the Sacramento River above the city of Sacramento; to eliminate all river and bay salmon fishing during June and July; and to restrict outside ocean trolling for salmon to those months when few immature fish are caught. These restrictions were all passed by the legislature but unfortunately a flaw which had remained undiscovered in the law for two years, was not detected until after the bill was enacted into law. This flaw has resulted in nullifying the closed seasons on the sea trolling. This was unfortunate for the establishment of closed seasons for salmon trolling in the sea was the most important part of the salmon conservation measure. Each salmon fishing district, from the ocean to the upper Sacramento and San Joaquin rivers were to be restricted so that the catch in each district would be cut down about 25 per cent. It was believed by all that this cut in the catch was absolutely necessary in the districts frequented by Sacramento salmon. All were agreed that it was most important to close those months in the sea districts when most of the salmon caught are small and immature.

Investigations carried on for several years under Professor J. O. Snyder, showed that the troll caught salmon in the sea are mostly small and immature except during two or three months at what is known as the height of the season. These favorable times, when most of the salmon which are caught are large and mature, were determined for each sea district along the coast and closed periods determined to prevent the catching of immature fish. The closed seasons would have cut down the total annual catch in pounds of salmon in each sea district about 25 per cent, but if we should estimate it in numbers of fish it would have been nearer 50 per cent. Commercial salmon trolling is of comparatively recent development. The old established salmon fisheries are on the bays and rivers. The bay and river fisheries are the ones which have had their fishing operations restricted. The salmon troll

fishery has been an added drain on the salmon supply with the result that the fishing restrictions in the inland districts have not been sufficient and the salmon supply as indexed by the number of fish which reach the spawning grounds in the upper Sacramento River has fallen off more than one-half.

The bay and river fishermen believe that all sea trolling for salmon should be stopped; the salmon trollers think that after the salmon get into the bays and rivers on their way to spawn they should be protected. There are a good many arguments on each side of this question but, it is our opinion that the preponderance of the evidence is against the outside or troll fishing. Washington and Oregon have stopped the outside salmon fishing both for trolling and purse seine fishing, and their opinion that we are unwise in permitting outside salmon fishing is backed up by the United States Bureau of Fisheries, which is deeply interested as it maintains extensive salmon hatcheries on all the most important streams.

We recommend that the present salmon law be redrawn so as to eliminate present errors and in order to cut down the outside trolling season as far as is necessary to prevent the destruction of immature fish.

PATROL.

Our present commercial fisheries patrol service as described in former reports is sufficient to enforce the fisheries laws with only one or two exceptions. The law passed by the last legislature prohibiting the possession of trawl or drag nets in the southern California districts has made the patrol work of that district so much easier that the one patrol boat we now have there, the "Albacore," should be able to take care of all of the sea patrol work in southern waters without the aid of another boat. In the waters from Monterey Bay to the north we are in need of a seaworthy boat for patrol. Recent experiences in trying to enforce the salmon and crab laws convince us that it is absolutely essential that a seaworthy boat be procured. We recommend again that the patrol boat *Quinnat* be sold and that it be replaced by a seagoing patrol boat.

INVESTIGATIONS.

The fisheries research and investigations of the department have been carried on mainly by the staff of the State Fisheries Laboratory under the direction of Will F. Thompson. Mr. Thompson's laboratory report is herewith presented.

In addition to the investigations of the laboratory staff, salmon investigations have been continued under the direction of Professor J. O. Snyder and by one assistant. Some of the results of this work have appeared at intervals in California Fish and Game. As a result of these investigations, we have been able to fix quite accurately the times of the year which should be closed to salmon fishing in the sea districts so as to prevent the destruction of small and immature salmon. This could not be determined except by an accurate analysis of the catch at the different fishing centers. Extensive marking experiments have been carried on which are shedding much light on the range at sea of the salmon from the different rivers. This knowledge

is necessary if we are to properly regulate the river and sea fishing for salmon. We recommend that this work be continued and be made part of the present program.

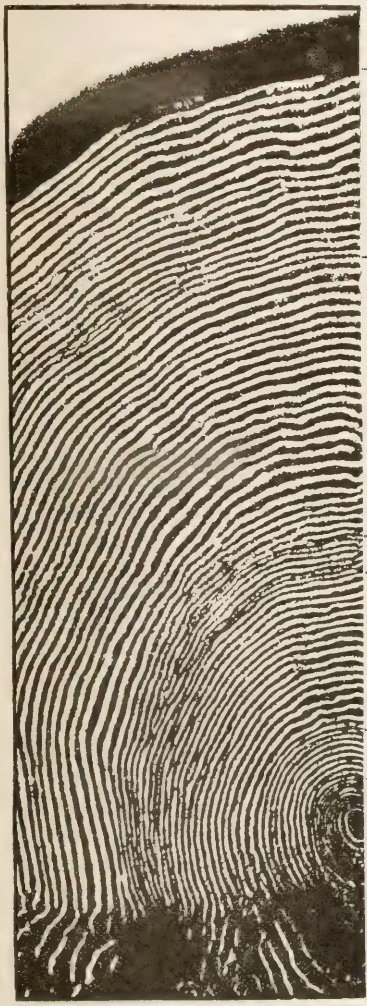


FIG. 11. Photomicrograph of a scale of a king salmon of the 1919 marking experiment indicating age and rate of growth. Photograph by J. O. Snyder.

THE COLLECTION OF STATISTICS.

The statistics collected by the Commission are for the purpose of detecting overfishing in case it occurs, and for the study of the great natural changes which occur in the abundance of the fish. It is, perhaps, not generally known and appreciated that fishery statistics in general are very defective, so much so, indeed, that it seems futile to

even attempt to use them in discussing the condition and the liability to overfishing of such great fisheries as those for the sardine or herring. This is all the more true in that until recently no data have been collected to throw light upon those great natural changes which confuse all present attempts to detect overfishing in such species as the sardine. To emphasize this fact we give the views of one of the greatest French authorities, Louis Fage, on the sardine, an opinion which may, in greater or less degree be held true of almost all great fisheries.

As Fage remarks, the available work on the sardine indicates that while the insufficiency of our knowledge of the sardine is due in large part to the lack of method and correlation in research, it is also due to the lack of available records as to the course of the fisheries and the fluctuations in their returns. Many of the questions which arise must be solved solely by statistics, which must be well made and comparable; and, as he says emphatically, it is astonishing to note the insufficiency of statistics for such a great fishery. Those of France have had their basis changed thrice, those of Portugal are based on sale prices, those of Spain and Italy are nonexistent, while the statistics in England, although good, are very recent. He enumerates the facts which should be included in these records, and are not, such as the monthly landings, the dates of appearance, the average sizes, etc., and ends with a statement the truth of which must be recognized, "La statistique bioloque de la pêche, telle que Hjort (1914) l'a définie, devra s'imposer, tôt ou tard, à tous les pays soucieux d'exploiter rationnellement leurs mers".* (Biological statistics of the fisheries, such as Hjort has defined, must be collected sooner or later by all the countries desirous of exploiting their seas rationally.)

The statistics which the Commission is collecting are of the nature required for the following of the actual catch as it shows the abundance of fish, and for the study of the natural changes occurring. They are therefore of two kinds, of equal importance.

One kind deals with the *amount of the catch*, giving not merely the grand total, but also the catch per boat, with the species, place of landing, etc., and can be compiled day by day if desired. This type of data is that which is mentioned in the above quotation as so lacking in the sardine fisheries. The California statistics of this kind are gathered by means of the carbon duplicates of fishermen's receipts for fish delivered to the dealers or canners. This system is described in greater detail in a previous biennial report. (Biennial Report of the California Fish and Game Commission, 1918-1920, pp. 56-58.) It is cared for by assistants of the Commission in San Diego, San Pedro, Monterey and San Francisco.

This year has seen the statistics for the fifth successive year correctly filed and deposited in the State Fisheries Laboratory for safe-keeping. The records are filed by the name of the individual boat, year by year, and it is possible from them to trace the size of the daily catches for any species at any time. The total take by locality has been regularly reported every three months in the quarterly publication, California Fish and Game, by an assistant devoting his time to such work. More detailed statistics are being at present compiled for the albacore fishery by two assistants engaged under a co-operative agree-

*Danish Oceanographical Expedition, *Clupeidæ*, 1920.

ment with the Bureau of Fisheries. These statistics are, we believe, very accurate, more so than those collected by any other government, and should be of especial worth as giving the individual catch per boat, upon which any real comparison of abundance in successive years must be based.

This system, being unique, and original, has had its troubles in getting started, there being no precedents to guide in the collection and filing of the "pink tickets" as the duplicate receipts are termed. There is at present, however, no doubt but that this system is now in full working order.

As has been found in Europe by bitter experience, these data as to the catch per boat must be interpreted in the light of the nature of the boats and their equipment. Any change in the catching power of a boat necessarily conditions the comparison of its catches from year to year. Therefore, change in gear employed must be carefully watched. With this end in view the Commission has, in accordance with a law providing for it, required the registration each year of the boats and their gear. Necessarily incomplete at the start, each year has seen the list of boats registered more complete, as they have returned to fishing or as new boats have been put into use. This forms a natural complement to the records of catches landed, and is indispensable.

From these records of catches and of boats used, there are incidentally compiled the usual form of statistics as to total catch by periods and by localities, as well as by species. The obtaining of such totals is, it is pointed out, entirely incidental and does not serve the primary purpose of the work, the furthering of our knowledge of the abundance of the various species concerned. It does, however, provide a measure of the commercial importance of the industry, and is of interest to the public. Such statistics have been issued by the Commission, as noted above, for each quarter of the year.

The second type of statistics are in Europe termed "biological statistics." These are taken by means of samples of the catch, and show the *varying composition of the same in regard to sex, size, etc.* They are indispensable in understanding the great natural fluctuations which occur, for those great fluctuations are characterized, and indeed consist of, changes in the internal composition of the catch. Examples of their great usefulness are found in such fisheries as the herring and salmon. These statistics are at present being gathered in two great fisheries, that for the sardine and that for the albacore, by the State Fisheries Laboratory, and the results are being properly organized for use by the assistants engaged.

It is regrettable that such biological statistics have been collected for but two fisheries, but the time and thought necessary to organize the proper methods have been too much to permit of branching into more fields. Now, however, that the possibilities and necessities of these two cases are well known and can be embodied in a formal routine, it may be possible to enlarge the scope. It is, however, necessary in each case to carefully survey the data obtainable and to carry research far enough to decide upon what the main changes to be expected are. It is also necessary to decide what amount of sampling will correctly define the characteristics of the catch which must be followed during their changes.

It must be remembered that putting these systems into actual practice is no mean achievement. Adequate statistics of this sort have been so rarely attempted that the principles and organization necessary have had to be discovered by experience, as will be particularly shown in the forthcoming report upon the sardine.

We are sure, as a result of this work, that the administration of our fisheries in California is upon the best and most modern basis possible. And although the results of this may not at their inception be spectacular, they will and are proving themselves the indispensable, solid basis which is at present so entirely lacking for European fisheries.

The collection of biological statistics (the second type) is a function of the State Fisheries Laboratory. A report on its work in connection with these and upon biological questions follows, dealing, however, only with the accomplishment of the first stage in the digestion and analysis of the accumulated data. The collection of these statistics as a whole must proceed as routine duties. They have been regularly performed, and results will follow from them in due time.

Respectfully submitted.

N. B. Scofield,
In charge Commercial Fisheries.

REPORT OF THE STATE FISHERIES LABORATORY.

PERSONNEL.

Since the submission of the last report very great changes in the personnel of the laboratory have occurred. The consideration of these changes will indicate certain alterations which necessarily have to be made in program and in organization in order that the work will continue and be fruitful; and it will explain certain limitations which have been put upon the work.

Upon the employment of Mr. W. F. Thompson to direct the scientific work in southern California, it was necessary to obtain and train assistants, since none already trained were obtainable. Mr. Elmer Higgins, Mr. W. L. Scofield, Mr. O. E. Sette, Mr. Harlan B. Holmes, Miss Frances N. Clark, and Dr. Tage Skogsberg, comprised the staff of the State Fisheries Laboratory at the time of the last biennial report. All of these had received their training in fisheries and statistical work in the State Fisheries Laboratory, and they had at that time reached a stage in their training which promised well for the future. All of these assistants, with the exception of Mr. W. L. Scofield, have, however, now left the Commission, either for the service of the Federal Bureau of Fisheries or for work at universities. It has become very apparent that the retention of these assistants when fully trained will require a higher standard of salary and greater provision for permanency of employment than at present offers, since there is very obviously a shortage of such men in the United States.

It has been realized that the training of these men has been an accomplishment which can not fail to be of importance to the progress

of fishery science, and it has at the same time been found that the work finished during the period of training has been of high order. It can not be expected that reports of scientific work accomplished can be produced readily by men who have never before done original research, but what is produced ranks high in freshness of viewpoint and thoroughness of treatment. There need therefore be no regrets for the time and effort spent in training these assistants, and there has been no hesitation in starting the training of a new group.

It must at the same time be realized that such a process can not go on indefinitely. The direction of such work becomes a difficult task, and will become increasingly so, since it is well-nigh impossible for the director to specialize in all of the several lines to the necessary extent. Sooner or later mature investigators must be retained to make at least a working nucleus.

It is necessary for a competent fisheries investigator to be trained in a highly technical way. He must have instruction and drill in the classification and anatomy of fishes, in the methods of determining age, growth, spawning habits, and in the collection of data and in its handling according to modern statistical methods. In addition he must be widely read and well informed in the fisheries work of foreign countries, and in knowledge of distribution of life within the ocean. To this end considerable time must be expended by each assistant along these several lines, as their relation to the problem upon which he is engaged becomes apparent.

There have now been appointned as new members of the staff Mr. Harold H. Greene, Mr. W. A. Selle, and Miss Ruth R. Miller, who, with Mr. Thompson and Mr. W. L. Scofield (resident at Monterey), make up the present staff.

In addition there have been appointed two assistants under a cooperative agreement with the Federal Bureau of Fisheries. The text of this agreement is incorporated in the following letter:

April 22, 1924.

Mr. Will F. Thompson,
State Fisheries Laboratory,
East San Pedro, California.

My dear Mr. Thompson: The suggestion has recently been made that the Bureau of Fisheries might well cooperate with the California Fish and Game Commission in the work which you are doing. We are interested in doing this for two reasons: First, in order to aid in the important investigations of the sardines and tuna which you are making; and second, in order to provide an opportunity for more young men to be trained under your supervision. I appreciate very keenly the good work which you are doing and especially the remarkable success which you have had in interesting younger workers in fishery investigations and in giving them a broader viewpoint of fishery matters and a knowledge of, and experience with, the best methods for attacking the complicated problems involved in work of this character. As you well know, it is, at the present time, extremely difficult to get men properly trained in fishery investigation or men capable of collecting and studying fishery statistics.

It is proposed that we reserve out of our allotments for the fiscal year of 1925 (July 1, 1924, to June 30, 1925) a fund of $2,000 to be expended in the employment of two men to work under your supervision. One thousand dollars of this is to be allotted from the appropriation of Scientific Inquiry and is to go toward paying the salary of a man to work on an investigation of the fisheries of California. Another $1,000 is to be allotted from the appropriation of the Division of Fishery Industries and is to go toward paying the salary of a man to work on the statistics of the fisheries of California. The California Fish and Game Commission may pay as

much more in the way of salary to these men as it desires. The selection of men will be left to you, but it is suggested that they be either college graduates or men in their senior year; and preferably men who will be interested in engaging permanently in fishery work. If you are unable to secure competent ones we will try to find men on the east coast who are capable. It may also be possible for us to send out one of the men on our regular staff who can profit by the training you may be able to give. There is to be no restriction, so far as the Bureau of Fisheries is concerned, upon the activities of these men—both are to work as you may direct. The only thing we ask is that whenever the positions in the Bureau are made available they shall feel free, so far as the California Commission and yourself are concerned, to accept.

A copy of this letter is being sent to Mr. Scofield and if the proposed plan meets with his approval and yours, the necessary funds will be reserved and will be available for use after the first of next July. If the plan works successfully it is our desire to continue it during future years.

Very sincerely yours.

(Signed) HENRY O'MALLEY,
Commissioner.

There is no short cut to knowledge or to the accomplishment of research, which is the extension of the boundaries of knowledge.

The director has therefore at the present time found himself not merely responsible for his own research, but for those of his assistants as well. It is fortunate indeed that students of high enough caliber can be secured to render this course feasible.

ASSIGNMENT OF PERSONNEL.

The work done during the past two years has been moulded to a very appreciable extent by these changes in the staff. Previous to the departure of the assistants who have left our service, every endeavor was made to bring their work to the point of publication. This was in itself a rather difficult matter, as anyone familiar with the vicissitudes of research will recognize. The net result was a temporary concentration of attention upon the sardine reports, since the resigning assistants were engaged thereupon, but the field work was not neglected and the continuity of our records of the fishery has not suffered. The publication of the work on the albacore has, however, been badly delayed.

Now that the sardine work has been brought to the completion of the first publication, the available new assistants have been concentrated upon the albacore data, leaving two to carry on the sardine field work at Monterey and San Pedro. Whether the analysis of the albacore catch can be completed in time to be of use this coming session of the legislature remains to be seen. No effort will be spared.

SARDINE WORK.

The first stage of the sardine work has now been completed and the reports thereon are now at hand for printing. The significance of what has been found needs to be emphasized and clearly explained, because it points the way to the future of the work and indicates certain possibilities in regard to the future of the industries dependent upon the sardine.

The stated purposes of the investigations have been fully outlined in previous Biennial Reports, in Fish Bulletin No. 2 and in Fish and Game, Vol. 6, pages 10–12, 32, 83, 180–182. They include: (1) The detection of depletion; (2) the discovery of whatever great natural fluc-

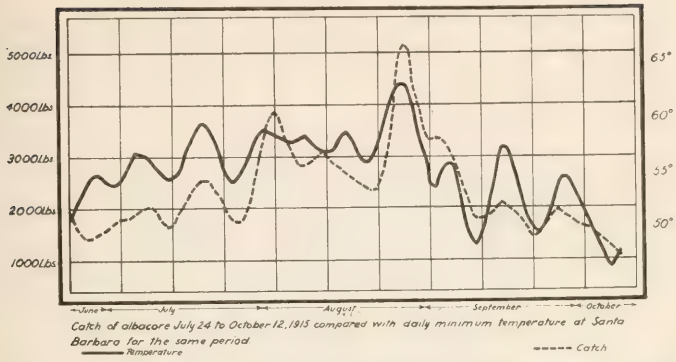


FIG. 12. The catch of albacore varies with the temperature. In this graph, temperature data have been set back three days so that that for July 27, for instance, appears on the same ordinate as does the catch recorded for July 24.

tuations occur, whether in abundance or in quality; (3) the foretelling of these fluctuations; (4) the analysis of whatever migrations occur, in order that the interdependence of fish of different regions may be known, and (5) the foundation of measures for protection in case depletion should occur.

Of these purposes, the second, although naturally not of greater importance, must precede all the others. It would be impossible to detect depletion, were the natural changes unknown; and, as is made very clear in the law under which we work and in our published papers, the conservation of our fisheries must be set above all else. The thorough understanding of the natural changes leads to their foretelling and to the assignment of the proper causes for instances of decline in abundance. The analysis of the migrations is necessary primarily in

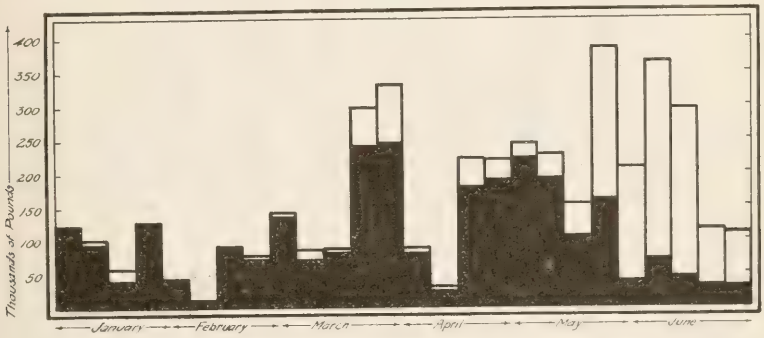


FIG. 13. Comparison of the amount of barracuda, white sea bass, and yellowtail caught by purse seiners and that taken by other boats. Black: Weekly landings by purse seiners at San Pedro, 1922. White: Weekly landings by other boats at San Pedro, 1922.

order that the extent of the effect of overfishing or of natural overabundance in a given locality upon other localities, may be determined.

It is nevertheless true that the discovery and correct definition of the great natural fluctuations in abundance is an end in itself. They must

be of great economic importance to the trade, because upon them depends the success or failure of the fishing, and their assignment to natural causes must be an insurance against rash and ill-advised restrictive legislation.

In these first reports upon the sardine it has been sought to accurately indicate the actual changes which occur, regardless of traditional beliefs regarding the species, and it has been sought to emphasize the fact that the present work is part of a permanent program; that not only does conservation of marine fishes require the eternal vigilance of a well-handled statistical system, but that the understanding or foretelling of natural changes requires continuous study.

SCOPE OF THE REPORTS.

It must be understood before the findings of the work are presented, that a rigid adherence to a practical end was insisted upon from each of the assistants. This, the understanding of the commercial catch, necessitated first of all the accurate portrayal of that catch as it actually existed. It was realized that a theory is of no use if the thing it is supposed to explain does not exist, and that a secure basis of fact must exist for any theory. Therefore, instead of presupposing a complex of migrations and miscellaneous phenomena to which almost anything could be assigned, and which fishermen's theories and observations should be regarded as proving, it was sought to impartially and rigidly record the facts of the run of fish. Our reports are, therefore, not attempts to explain phenomena which we merely suppose to exist, but they are records of what phenomena actually do appear.

The first and most natural step in such a rigidly scientific procedure, was to find out how extensive our records must be to show the tendencies we desired to analyze. The only feasible way to accomplish this was to make sure that we had determined these tendencies as nearly as might be, by securing an excess of records. Then, by breaking these into independent series and comparing them, the degree of divergence one from the other would indicate to what extent the catch was distorted by reducing the extent of the record. Were two entirely independent series of samples of the catch similar in what they showed, then the inference is fair that what they indicated must be the truth. This is the phase of the problem dealt with by Mr. Sette.

Mr. Sette has shown that to obtain a picture of the year's catch which is sufficiently correct to use, it is necessary to sample the commercial catch twice a week. He has shown that systems of sampling used by other investigators upon the herring would be entirely inadequate in the case of the sardine. In coming to this conclusion he was not aided by any analysis of their own methods made by these investigators and we believe that our anlaysis of what is necessary is one of the first to be made for any great fishery.

Upon this basis of what we knew was necessary, the remaining reports are made by Mr. Elmer Higgins, Mr. W. L. Scofield and Mr. W. F. Thompson. They constitute a presentation of the commercial catch as a rigid system of sampling shows it.

Mr. Higgins and Mr. Scofield show that there is a well-marked change in the catch from year to year and that the abundantly represented sizes shift in a consistent way from year to year. This change is due

to the incoming of abundant groups of sizes, which then from year to year increase in length until lost in the mass of larger fish. They furthermore show that there may be periods several years in length during which the spawning is relatively unsuccessful. They can not, however, follow the progress of these groups above twenty-two centimeters.

Their data show the passage of but one of these periods of poor spawning, and there is no ground as yet for assuming any definite regularity in the appearance of this phenomenon of dominant and suppressed groups. On the contrary it is expected that these periods of nonsuccess in spawning will vary greatly in length, and that at any time there may ensue periods of such length as to, for the time being, practically sweep out of existence the sardine fishery—for the smaller sizes at least. This same thing has happened in European herring fisheries. The advantage to the canners of keeping their product diversified should be plain.

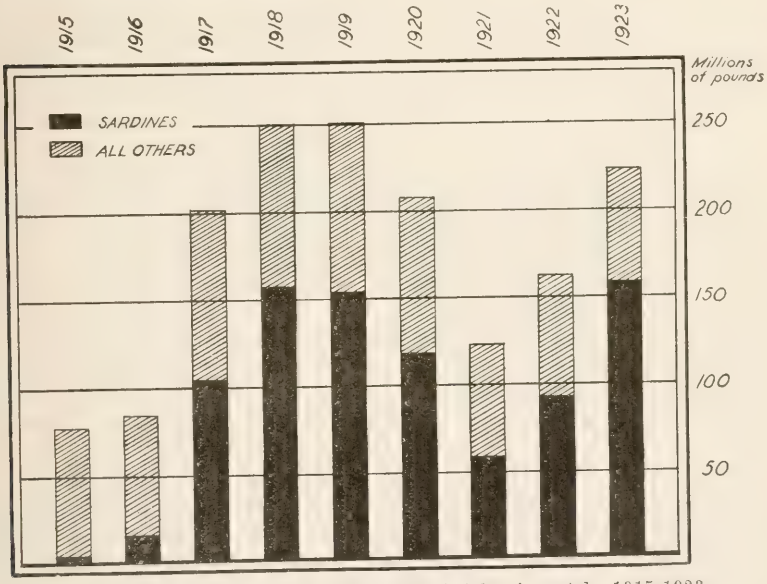


Fig. 14. Amount of sardines in total California catch, 1915-1923.

It was also attempted by Mr. Higgins to correlate the sizes of sardines taken with the numbers of fish packed in the pound oval cans. He reports that the changes observed in the catch by our sampling methods are reflected in the pack of the canners. It is therefore possible to prophesy the take. A tentative effort at prophesying the catch during the season 1923–1924 was successful at San Pedro. There is nothing at all remarkable in this, considering the firm basis upon which our records are founded, and it is the conviction of the staff that we may look forward with assurance to the time when very definite and valuable forecasts can be given the canners. It is, however, felt that considerable caution is yet necessary in the use of this possibility.

An examination of the data from San Pedro by Mr. Thompson led to a report upon the extent to which the changes could be followed. The net result was to show that there is a certain independence between the fisheries for large and for small fish. This leaves it doubtful whether a class which was dominant during passage through the smaller sizes would remain so during passage through the larger sizes. A certain year group might appear to be very abundant while it is among the smaller sizes, simply because the few age groups with which it would be compared are on a low level of abundance. But upon becoming one of the large sizes which run during January and February the age groups with which it is contrasted are many more in number and may include among them equally dominant ages. There is, therefore, a necessity for careful observation as to just how far these conditions limit the prophesying of the catch.

There is also room for thought in regard to just how far these phenomena limit our ability to detect depletion from overfishing. In discovering this it is necessary to rely upon two criteria which can not well be considered separately. The first of these is naturally the decrease in actual numbers of fish in the ocean. The second is a decrease in the average length of life of the individuals, or, in different words, the decrease in relative numbers of old fish, a decrease in the proportion of survivals.

The presence of this great variation in numbers contained in a year class, which we have termed the phenomenon of dominance or of suppression, at once raises the question as to whether a lack of fish is due to the "natural" lack of success in spawning the younger fish, rather than to overfishing. This "natural" lack, however, would be accompanied by a greater abundance of the older fish, overfishing by a lesser abundance. The phenomena of dominant age groups, which we have demonstrated, therefore throws the burden of proof of overfishing upon the second criterion, namely the decrease in average length of life, which would accompany the greater death rate caused by intensive fishing.

The determination of the average length of life involves a comparison of the young and old age classes. In many species it may well be a fair presumption that the younger age classes are always of approximately the same abundance, the success of spawning not varying, so that at any given time the percentage of survival at a greater age may be determined at least approximately by the direct comparison of that older age group with the younger ages present. However, as we have shown in the sardine, the nature of the fishery and the errors in the necessary method of sampling, effectively preclude a reliable comparison of the smaller and larger fish, which represent the young and old.

There is, then, no choice for us in our observation of the sardine fishery, save to rely upon following each year class through its life history, and to compare its abundance at each stage with an average obtained by many years' observation. The difficulties in so doing are manifold. We have therefore come to the conclusion that it is better in the case of the sardine to frankly face the possibility that we may not be able to detect overfishing until that overfishing has progressed farther than it might be wise to allow.

It is entirely possible that some such inadequacy of data lies at the basis of the prevalent idea that "pelagic" species such as the herring are inexhaustible.

I would therefore like to propose in this biennial report the use pending the perfection of our knowledge, of the only alternative method possible, which is regrettably crude. This, the direct observation of the fishing methods, with careful record of place of fishing, apparatus, methods, and sizes of catches, should allow us to roughly compare at any desired time the relative difficulty of taking the two classes of fish, old and young. These two classes run at different times of the year, and these observations should allow us to make some estimate of their actual abundance relative to one another. In other words, our work has shown us that instead of observing a single unified fishery for the size of the catches and duration of life, we find ourselves compelled to correctly determine the catches in two more or less independent phases of the fishery, and to compare the course of the two. This is a more fundamental and more difficult task than one would realize at first glimpse. It throws a very great responsibility upon those having in their care the collection of fishery statistics and the observation of fishery methods. But could it be shown that the fishery for old fish is persistently on a decline in comparison to that for young fish it would be fair to presume overfishing, unless change in methods or apparatus accounted for the increase in young.

However, to summarize the whole, there can not be a shadow of a doubt that the securing of more refined evidence may be delayed beyond what it should be—our work has clearly indicated that to the writer. It may well be that our research, carried further, will clear this matter up and provide means whereby depletion can be detected at an early date. Thus our studies upon the seasonal run of fish may show that at some one part of the season the various classes of fish are all represented at once, and that a correct evaluation of their relative abundance may be obtained. In fact, the development of our knowledge and the per-

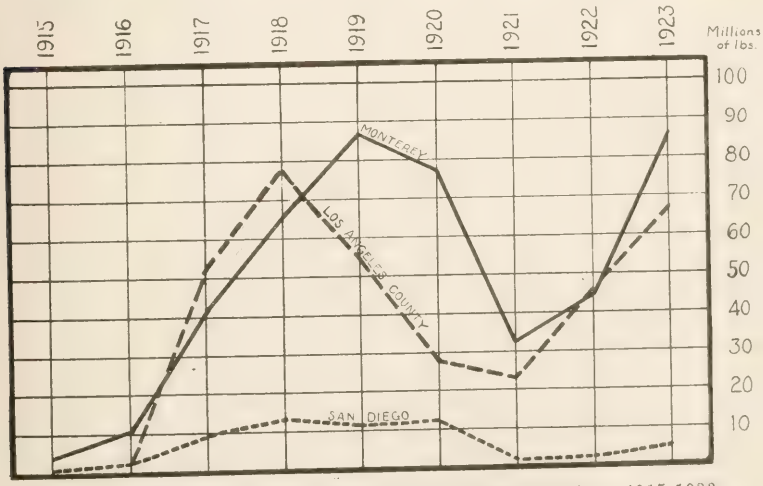


FIG. 15. California sardine catch by statistical districts, 1915-1923.

fection of theory may lead ultimately to the accurate observation of the condition of the species. No trouble or expense should be spared to accomplish this end, since the sardine fishery promises to increase far beyond its present bounds, and since the problems to be met with in the sardine investigation are faced in other great fisheries, but have never been solved.

The sardine is a source of food for almost all our other great fisheries, such as the albacore, barracuda, sea bass, and tuna. Tampering with its abundance may result disastrously to many interests—and in the absence of any clear-cut and sensitive method of detecting overfishing, the greatest caution must be used. The writer has convinced himself that unnecessary drain upon the supply should be avoided until research has shown that it is possible to detect overfishing in time, and for that reason it is his belief that the use of sardines for fertilizer should be emphatically condemned, and a more conservative growth of the fishery awaited. Were we considering the use of the water in a great river, would it be wise to recklessly disregard all the industries which might be dependent upon the uninterrupted continuance of its flow? Would it not be wiser to use the water only when its use was clearly more valuable than the industries dependent upon it?

And in the meantime, the need to develop our technique of detection of overfishing can not be too emphatically stated. No other agency than the state government is in a position so to do, and no government has as yet succeeded in developing such technique, or indeed, made any thorough attempt at it.

The program of investigation of the sardine has, however, indicated that the prophesying of the commercial catch a short period in advance is possible and feasible and there is every prospect that further study will refine and perfect our methods. This is indeed fortunate, as hope of detecting overfishing in the future depends upon the thorough analysis of the catch, an object that is justified by its practical results alone.

This analysis of the catch will accomplish another important end, namely, the clear understanding of the cases in which success in spawning is lacking for a number of years, causing fish to become scarce, and bringing into existence an urgent popular demand for radical restriction of the fishery. In such cases it is going to be possible to show that the older fish are not particularly affected by the particular cause of the scarcity, and it should be possible to prophesy the restoration of the fishery in time to avoid undue restriction.

In conclusion, the net results of the sardine investigations are that the present program is correct in the main but that more careful attention must be given to the statistics of catch and to the recording of method. It is going to be possible to foretell the catch, although detection of overfishing is shown to be further removed.

THE ALBACORE INVESTIGATION.

During the past two seasons observations have been made upon the albacore runs, as usual. The results from these have been filed away, but are now being subjected to analysis since the completion of the sardine work has allowed the concentration of the assistants upon the data. The report upon the albacore, which has been for some time in

the final stages, has not been completed for publication, and it is not, at present writing, known how soon the writer can resume work upon it. The material has collected faster than analysis can be made by the much-interrupted labors of a single investigator, the more so as at times he has lacked assistance of any kind. It is possible, however, to give a résumé of the results of the work, which are of very considerable interest, especially when compared to those of the sardine.

In common with all investigations carried on by the Fish and Game Commission, the primary purpose of the work is to watch carefully for evidences of depletion from overfishing. Of this there have to date been found no good evidences in the albacore fishery, despite the decline in catch. In view of this, the writer is not ready to recommend restrictive legislation which might aggravate a scarcity very probably due to the habits of the fish.

The great changes visible in the albacore catch and the distribution of the fishing grounds cannot well be assigned to overfishing on the basis of our present knowledge. The abrupt cessation in 1923 of the fishing in the more northerly of the frequented grounds is not at all characteristic of overfishing, if the history of other fisheries can be taken as any criterion. Nor is it consistent therewith that the fishing near San Diego should be unusually successful at the same time. Furthermore, the decline to the north has been a failure to take fish from what schools were present, whereas were overfishing and depletion the cause there should be every reason to expect occasional good catches from small schools. Unless these phenomena, upon investigation and analysis by means of our statistical records, prove to have other meanings than they apparently have, there is need for caution in coming to a conclusion.

Overfishing may nevertheless be taking place, despite this great variability. Developments in fishery science have served to indicate how complex the factors may be which govern the abundance of fish, and have rendered it questionable whether overfishing can always be distinguished from great natural fluctuations. It would therefore be advisable to conserve the species in so far as possible until our knowledge of basic principles of fishery science can be more clearly applied.

On the one hand, our work has indicated to us that the variability in the runs of albacore, just as in the runs of sardines, must delay recognition of overfishing and must throw increased emphasis upon the necessity for correct and thorough statistics of the catch. Our "pink ticket" system must become the foundation stone for our biological analysis.

But, on the other hand, the possibility of detecting overfishing is heightened by the relative lack of variability in the numerical strength of incoming age classes, since some clue may very probably be obtained to the length of life. Analysis is proceeding along this line. The task is a considerable one, but providing there is a lessening in the proportion of mature taken, accompanying a decline in the catch, as shown by our "pink tickets," it will be safe to attempt restriction of the fishery, we believe.

If this uniformity of incoming year classes continues in evidence despite closer analysis and the records of succeeding years, there will be no opportunity to foretell the catch by those methods so readily applied in the case of the sardine, because of the dominance of certain age groups and the suppression of others in that species.

In lieu of fluctuations in catch due to the presence of dominant or suppressed age groups, there have been found great changes due to the sensitiveness of the albacore to physical conditions. At the present stage of the work, this analysis has been carried only so far as to compare the different sections of the individual runs. It will, however, now be attempted to carry the analysis to a comparison of the annual changes with whatever oceanographical or climatological data are available. It is entirely possible that the albacore runs as a whole vary with, and that their magnitudes are the result of, conditions existing previous to the runs themselves. In such case the prophesying of the commercial catch may be possible. Such a case has been supposed to exist in regard to the mackerel off the British coasts, but the data upon which the reasoning was based seem to us very unsatisfactory and as they have never been followed up, we can place no dependence upon the relationship supposed to exist. It would appear that our knowledge of the albacore runs is so thorough that we can logically hope for far more satisfactory results than in that case, and it is the present intention to follow the work through.

It is the hope of the laboratory staff that it may at some time in the future be able to utilize a boat in following up this clue to the behavior of the albacore. This boat should make a daily traverse of a given region, taking careful scientific records, until a run occurred. Thereby it would be possible to definitely assign the runs of fish to the correct causes. As we have plotted the localities in which runs occur, it seems to us entirely feasible to accomplish this.

It may be pointed out that, as in the case of the sardine, there has been attained at least partially the first step in the understanding of the catch. The varying characteristics of the catch have been accurately recorded, and the actual variation brought to light as far as possible, both as regards the varying classes of fish taken, and as to the varying size of the catches. This, the first step in any scientific analysis of a natural phenomenon, is a secure basis upon which to base decisions.

However, in considering the detection of overfishing we have found that the presence of this great variability in catch has the same effect—in lesser degree perhaps—that it did upon the detection of overfishing in the case of the sardine, that is, to render it more difficult. A persistent decrease in proportion of mature fish and in average catch per boat must be brought to light, and must exceed so clearly the incidental variations as to be unmistakably significant. Not merely must there be known the proportion of each age in the samples obtained by this rigid system, but there must be carried forward a comparison of the average boat catch each year during the runs of the smaller or larger fish. The need for the "pink ticket" system is obvious and great. It can not be dispensed with lest we lose the most of our significant evidence.

The bearing upon theories of migration of the observed correlation between the albacore runs and the changes in climatological factors, deserves to be sharply emphasized. It has been possible to demonstrate this correlation to a sufficient extent so that it seems fairly certain that the minor intraseasonal so-called "runs" are not due to incoming schools but to schools which are already present. None of the evidence of migration has been found to bear critical examination. We must

conclude that whatever migration occurs is not responsible for the peculiarities of the fishery.

The great variations in locality of the season's catches are impossible of comparison with any of the great proved migrations, such as those of the salmons, the eel, or the birds, for in no one of those cases are the appearances abrupt and unrelated one to another, nor in any one case are the migrations omitted or partially aborted as was the run of albacore during 1923 in southern California. Furthermore, the appearance of the albacore in our waters is not preceded by its presence in any other waters.

It seems, therefore, plain to us that our albacore fishery consists of fish belonging to our own or offshore and deeper waters, and that these reappear each spring as soon, and no sooner, than they begin to take bait at the surface.

At present there seems to us to be two lines along which this phase of the albacore work, that of the study of movements, may be followed, in addition to the main one of correlating the catch with observed physical conditions. One of these lines is to carry out an intensive study aimed at the distinction of our albacore from that of any other region. This would be expensive work and would involve work in Hawaii or in foreign countries. The other would be an intensive search for the spawning places of the albacore. This, which would at least require very expensive sea-going vessels, and is not within our reach at present, would be little likely to succeed, since the discovery of a few eggs and young would be far from establishing the spawning place of the species.

The rate of growth of the albacore has been investigated as thoroughly as possible. The work upon this, which has been difficult because of the indistinctness of age marks upon the scales or bones, shows that the occasionally present youngest fish are 21½ inches long and just completing their second year; that the group of medium-sized fish, usually the smallest size taken, average about 27 inches in length and are finishing their third year; and that the larger fish, of 38 or 40 inches in length are in the eighth year or older.

PURSE SEINE INVESTIGATION.

Dr. Tage Skogsberg has completed his investigation of the purse seiners and has left the service of the Commission for employment at Berkeley.

His report is a very exhaustive treatment of the facts upon which regulation of that fishery must be based. He gives a description of the industry and its history, deals fully with the importance of the purse seine method to the fresh fish supply and to the canneries, and analyzes their effect upon the supply and price of fish. He then considers them in relation to the various species which they take, such as the barracuda, the white sea bass, the yellow tail, and the blue-fin tuna. His conclusions as to the possibilities and results of prohibitive or restrictive legislation are carefully considered, and he points out their great importance in the future development of our sea fisheries.

The fact that the purse seine fishery was enormously expanded in response to the wartime demand is well shown. Although the purse seiner *Alpha* operated as early as 1893, yet it was not until 1915 that expansion took place. In that year five boats were used. But each

year saw successful fishing and high prices, until in 1920 more than a hundred boats were operating. That such an enormous growth could be called forth on demand demonstrated that in case of war need great supplies of food can be drawn from our waters. But since then the demand has slackened, and certain of the fisheries not having been productive, there have been hard times in the purse seine fleet (at least until the time of completion of the report).

It is also clearly shown, that regardless of the nationality of the fishermen, the ownership of the fleet has come to rest in the hands of the banks and of moneyed men. The fishery is not, therefore, a process of "fattening" the "alien" at our expense.

The purse seiners are shown to be of the greatest importance to the several fisheries. Almost all the blue-fin tuna taken is brought in by purse seiners, and the canning of this species is dependent upon them. They also take a very large part of the yellow-fin tuna and the bonito used for canning. Of three species which are very important in the fresh fish market, namely the barracuda, white sea bass, and yellow tail, the supply during the winter half of the year is almost altogether obtained from the purse seiners. Although Dr. Skogsberg's analysis covered but six months of the year it is evident that the purse seine is responsible for nearly half the supply of fresh fish markets at Los Angeles harbor.

Examination of the individual fisheries shows no conclusive evidence of a harmful effect by the purse seiners. In the case of the barracuda the purse seiners are especially important as bringing fish from Mexico, thus lightening the demand upon our local fisheries, and acting as an aid in their conservation. The method is not more harmful than those of other great fisheries. Young fish are caught in excessive numbers in but a small portion of the year, a fault which could be readily corrected by a close season. In regard to the white sea bass, the same may be said as to the effect of the purse seiners in tapping distant grounds, and but few young bass are caught. Nor are there any evidences of overfishing in the cases of the yellow tail or blue-fin tuna. Dr. Skogsberg concludes that overfishing must be discovered by careful biological study of the catches, and that as long as a given supply is to be taken from the water, the purse seines are as efficient and reasonable a means of so doing as any.

It is evident from the report that any radical restriction of the purse seine fishery will result in rendering the supply of fresh fish precarious and inadequate, and that—instead of conserving our supplies—a much greater strain will be imposed on our local waters. Dr. Skogsberg recommends the making of a close season during April and May, as a protection to the young barracuda then taken in numbers.

Dr. Skogsberg's report is reviewed here at some length because it is indicative of the knowledge such work can place in the hands of the administrator and the legislator, and because it demonstrates the great value of our statistical system of boat catches, the "pink ticket" from which it was largely taken.

He had time only to analyze the catches for a period of six months and there should be a similar analysis of the remaining six. There is no reason why such an analysis of boat catches cannot be carried on continuously and presented in addition to the ordinary statistics of catch, for such an analysis may be made a step in the obtaining of the total

catch. But the essential necessity on the part of the compiler for a knowledge of the biology of the fish and for a knowledge of statistical methods is obvious from a perusal of Dr. Skogsberg's report. For that reason it is elsewhere urged that changes be made in our organization which will allow of the development of such a system of reports.

GRUNION INVESTIGATION.

Miss Frances N. Clark, who was with the laboratory during the first year of the last biennial period, is now at the University of Michigan seeking a higher degree. She is, while there, undertaking an investigation of the grunion and of our common market smelts. The laboratory has taken samples of these species at regular periods, and has forwarded them to her for analysis.

Her work has progressed through a study of the reproduction and rate of growth of the grunion, and has now begun on a study of the two smelts (*Atherinops* and *Atherinopsis*) from the same standpoints. The results of his work are promising to be of considerable importance, especially in the case of the grunion, which will sooner or later require protection, as it has becme a very famous fish on our southern beaches, and is sought by thousands of people during the periods of its runs.

LOCAL RACES OF HERRING, SARDINE, AND ANCHOVY.

Mr. Carl L. Hubbs, of the Museum of Zoology, University of Michigan, has prepared for publication as a Fish Bulletin of this laboratory, a report upon the local races of the three commercially important clupeoid fishes found on our coasts, particularly as the definition of these local races is affected by seasonal variations. The importance of such investigations is very great, since through them has been expected some clue to the relative interdependence of fishes of different regions. The persistence of a given peculiarity of structure in the fish of a limited region argues that those fish do not migrate extensively beyond the boundaries of the region, and that they do not receive migrants. This would seem to be true regardless of the cause of peculiarity, and regardless of whether the peculiarity is racial, the result of environment, or transitory. The matter is, however, a complex one, and must receive intensive analysis, toward which Mr. Hubbs has made this contribution.

THE LIBRARY.

Since July, 1922, the library has received very few books. This is due in part to the necessity for economy, and in part to the prolonged absence of a librarian able to devote sufficient time to ordering and caring for accessions. However, enough recent publications have been secured, so that the laboratory investigators have had an opportunity to keep fairly familiar with the progress of fishery science.

The library as it now exists, although of moderate proportions, contains a good representation of the most important work in the subjects of interest to the research men stationed here. It has of course been the aim of those in charge of selecting books to emphasize such material as has fundamental significance and definite relation to the problems with which the Commission has to deal, keeping at a minimum papers of purely local, incidental or general biologic interest.

The lines of future library development are clear. As in the past, it will be important to spend a certain percentage of the appropriation for current books, especially in view of the fact that fisheries research is now the object of increasing international interest and attention. A set of "Biometrika," which is the chief journal of statistical method, would be an invaluable addition to our resources. However, the main mode of expansion must be acquisition of desired papers that are scattered in various scientific periodicals. Whenever possible, we will order only the issues which contain the special investigations of interest, so as to avoid purchase of large volumes in which most of the material would be useless.

Aside from addition of books, provision for permanent preservation of the collection now shelved becomes more and more necessary. Three-fourths of the material here is in the form of paper-covered pamphlets, which are of course exposed to dust and other deteriorating influences. Their adequate protection requires that they be bound as soon as possible.

As far as its immediate usefulness is concerned, the library's chief need is for a systematic catalog. Enlargement of the staff and growth of the library combine to make us acutely conscious of the waste of time consequent upon trying to use unindexed material. We therefore consider it essential to build up a catalog that will make available for ready reference the perhaps unrealized resources of the books already at hand.

CONCLUSION.

In this report, three facts are preeminently worthy of consideration. One is the necessity for retaining good men as guides for our student assistants; another is the need for giving the scientific work a more stable position and a better relationship to the work of other agencies; and the third is the great emphasis which our work is now throwing upon the necessity for carefully fostering our statistical system. As far as concerns the first two facts, the retention of good men and the permanence of the program are closely bound together. Good men do not work for the money immediately in sight. They must feel themselves engaged in work which has its place in the world, a place that is recognized as worthy.

Much of the fishery work which has been carried on in the United States has been transitory and unstable in aim, and the fundamental principles of fisheries conservation have received very little attention because of the evanescent nature of each attempt. We have tried to so formulate our work that it includes those things which are fundamentally necessary, and we are trusting that our devotion to a cause will not be wasted by the heedlessness of the future. There is, however, little ground at present for this faith in the persistence of the work, and as a result it is hard to persuade anyone that earnest, unselfish work will be worth while, or that the program will last long enough to solve any of the basic problems of fishery research and conservation.

In short, the organization of which the laboratory now forms a part exists only in the minds of those who now hold office in and under the Commission. With the passing of these incumbents there will vanish all traces of the carefully thought out permanent program. None of the objectives have been made obligatory, and no provision has been made for seeing that our successors are well informed or well advised. Under

such conditions good men can not be retained, and the following of fundamental and difficult aims is rendered hopeless. The remedy lies plainly at hand, to formally organize the scientific work, to formally provide for good advice and cooperation from the outside world of science, and to see that our aims are rendered obligatory in so far as is proper and in such a way as to protect them from ignorance or malice.

The whole of modern fisheries science teaches the lesson that adequate statistics are continuous statistics; that conservation implies continuous observation; and that some of the most fundamental problems are yet unsolved and must be the object of unremitting attack by biologists. And unless our work here can be placed on a permanent basis and provision made for its close, intimate contact with the whole field of work, there is little utility in proceeding further.

The writer would therefore recommend a legal foundation for the formal organization of the laboratory, the formation of a cooperative arrangement with the Federal Bureau of Fisheries, and the creation of an advisory committee or board to keep a general supervision of the scientific work. The time is most opportune for these things, in that the bureau is friendly, and that the various states are awakening to the need of the study of conservation. By our action we can set a precedent whereby the bureau can be made a unifying and correlating agency between the several states, to the end that cumbrous and awkward treaty control can be avoided.

The writer would also urge that the work done up to the present has demonstrated the importance of the statistical system, and its intimate connection with the biological work. He would recommend the careful reorganization of the statistical system to free it from any danger of its devotion to erroneous ends, and to place it under the immediate direction of a scientifically trained man.

Respectfully submitted.

W. F. Thompson,
In charge.

REPORT OF DEPARTMENT OF EDUCATION, PUBLICITY AND RESEARCH.

The Honorable Board of Fish and Game Commissioners,
State of California, Sacramento, Cal.

Sirs: It is with a feeling of gratification that I hand you herewith a report on the activities and accomplishments of the Department of Education, Publicity and Research, which you will find, reviews the most successful biennial period, so far as service to the public is concerned, since the establishment of the department in 1914. I am more than ever convinced that no more fundamental conservation work can be done than that accomplished through the development of a public sentiment favorable to wild life conservation.

The past biennial period has been marked by increasing demand for lectures and displays of motion pictures. Some of the increased demand has come from the numerous men's clubs such as Rotary, Lions and Kiwanis. Continued endeavor has been made to reach the numerous

LECTURES.

high schools of the state, as is evidenced by the record which shows that more than thirty were visited during the period. Return engagements are a common thing, showing that lectures and pictures are appreciated. One long-postponed trip to southern California resulted in a series of nineteen lectures and a total attendance of 9275. The demand for lectures continued from fish and game protective associations.

A particularly fruitful field of endeavor has been the numerous training classes for scout masters, camp fire guardians and leaders of girl scouts. Eight meetings with such groups have resulted in stimulating the interest of those who deal with boys and girls. Conservation needs can most readily be spread by contact with such groups as these.

Each spring, a series of nine lectures on fish and game have been given in a course in forestry at the University of California. These lectures afford a splendid opportunity for inspiring a student group that later goes out and carries the message of conservation into the field of forestry and industry.

The usual series of illustrated lectures have been given at the State Fair at Sacramento each September.

The following is a summary of the lectures given:

Lectures Given During Biennial Period, July 1, 1922, June 30, 1924.

Organization	Number of lectures	Attendance
High schools	31	10,223
Grammar schools	17	8,189
Universities and colleges	23	3,215
Civic and public	34	7,053
Boy scouts, camp fire girls, etc.	12	447
State Fair	26	3,250
Miscellaneous	17	1,481
Motion picture films only	9	4,300
Totals	168	38,069

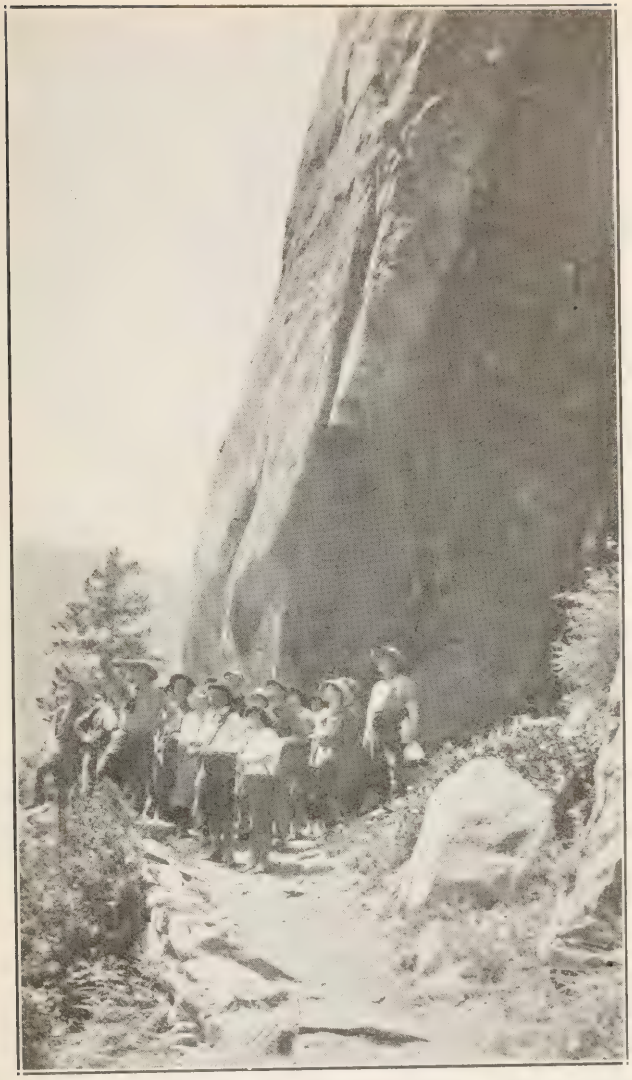


FIG. 16. Studying nature first-hand. Nature guide field excursion, Yosemite Valley, Summer, 1924. Photograph by J. Lloyd.

SUMMER RESORT EDUCATIONAL WORK.

Through cooperation with the National Park Service, opportunity has been given each summer to build up public sentiment relative to conservation in Yosemite National Park. The director of your Department of Education and Publicity spent the summer of 1922 and that of 1923 in Yosemite lecturing and conducting field trips. The results have been most gratifying. Many thousands of people have heard conservation lectures and, better yet, have gained first-hand information relative to

game and nongame species. Personal contact with thousands and the teaching of natural history in the open is laying a worth-while foundation upon which the conservation of the future can be built. If "there is no more pitable sight than ignorance in action," then the converse is certainly true, that there is nothing more effective than intelligence in action. Let the people of this state really know the life history and habits of its fauna and its present status, and conservation will be assured.

It is a satisfaction to chronicle the fact that the nature guide work in Yosemite has proved so useful that the original goal—a museum and a park naturalist in every national park and a nature guide program every season—is now assured. No little share in the success of the nature guide movement is to be attributed to the farsightedness of the California Fish and Game Commission in supporting the work in its beginnings.

With an increased personnel, the same program of evening lectures and campfire talks, daily field trips and office hours has been pursued each summer with greatly increased attendance, as can be seen by reference to the following tables:

Attendance Record Yosemite Nature Guide Service.

	Field trips		Lectures	
	Number	Attendance	Number	Attendance
July-August, 1922	99	1,970	43	27,100
June-August, 1923	226	3,566	69	49,195
May-June, 1924	72	939	85	16,202
	397	6,475	197	92,497

MOTION PICTURES.

The Educational Department has not been in a position to push the use of motion pictures by schools and other organizations because of the small supply of films on hand and because several of the films are badly worn. The only additions made in the past two years were a reel devoted to the life history and habits of the king salmon and several hundred feet on waterfowl in the Sacramento Valley made by ourselves. Particular mention should be made of a fine series of pictures of whistling swans taken in the rice fields of Butte County. A flock of a thousand birds was photographed in a rice field and splendid pictures of the birds in flight were secured on Butte Creek.

The need is for a more adequate library of films so that opportunity can be taken of the many requests for their use. Replacement of worn films is particularly urgent.

Nor does the demand come from within the state only, for during the past two years, requests have come from four western states and Hawaii for the use of our films. It was necessary to refuse these requests in that the pictures are so constantly used in our own state.

During the past biennial period there has been increased demand also for conservation literature on the part of teachers and pupils of the public schools. Evidently the public schools are placing more emphasis upon nature study and conservation and herein lies the reason for increased demand. The Commission's supply of teachers' bulletins is practically exhausted and hundreds of letters are written a year explaining that the supply of the bulletin, "Bird Study in the Public

FIG. 17. The place to teach conservation is out-of-doors. Cooperative work in Yosemite is building a better sentiment favoring conservation. Photograph by J. Lloyd.

Schools'' is entirely exhausted. Where can the commission's educational campaign be made more effective than in the schools of the state? Were we in a position to furnish suitable helps to teachers, much could be accomplished. Stress is here laid upon the urgent necessity of supplying this great need in the immediate future. In the same connection should be mentioned the opportunity afforded through boy scout organizations. If leaflets or bulletins, suitable for use by scouts, were available, suitable training relative to the conservation of wild life would be included in the educational program of each scout troop. A special fund to cover the preparation and publication of such leaflets and bulletins is most important.

The department again cooperated with the State Department of Education in the preparation of a bird and Arbor Day manual. A great deal of material was furnished but funds not being available for the publication of the manual, part of the material was utilized in a special number of the ''Western Journal of Education.''

As in the past, many contributions of specimens of birds and eggs were made to schools and nature study departments. This department of the Commission aims to act as a clearing house for information relative to the teaching of nature study and conservation and also as a source of material for objective teaching.

PUBLICATIONS.

Volume 8 of CALIFORNIA FISH AND GAME, the quarterly magazine of the Commission, contained 256 pages and 87 illustrations. Two special numbers, a Game Refuge number containing maps of every game refuge in the state and a description of each, and a Hatchery number of 80 pages containing a history of fish-cultural operations in California were issued. Volume 9 contained 192 pages and 41 illustrations. No special numbers were included.

The edition of the magazine is now 7000 and the circulation very close to 6500. Many applications from individuals and libraries for early numbers of the periodical in order to complete sets have been received. Unfortunately many early numbers are now so rare as to preclude issuance to any but public libraries or libraries of public or important institutions. There is continued evidence that the magazine is read from cover to cover and numerous commendatory letters have been received.

A clean-up of the mailing list in the fall of 1922 resulted in the elimination of only about 200 names. The mailing list grows at the rate of about twenty names per month.

One use which the magazine appears to fill regularly is that in the classroom in our high schools where it is constantly used for reference by biology classes. Articles taken from the quarterly often appear in outdoor magazines and in newspapers.

Numerous newspaper items have been sent to the more prominent newspapers of the state. These appeared to be well received by editors and nearly always appeared in print. Among the special series of articles should be mentioned a number dealing with books for sportsmen furnished the sporting editor of the San Francisco "Examiner," a short series of items dealing with the restoration of Lower Klamath Lake as a breeding ground and a long series of one item a week relative to saving the Klamath River as a fish reserve sent newspapers during the spring and summer of 1924. Material for several feature articles was furnished.

INVESTIGATIONS.

Several investigations of importance have been made. They include the destruction of steelhead trout in the Pajaro River due to pollution and low water, investigation of the status of game birds in the marshes of Butte and Sutter counties, fish resources of the Klamath River, and an investigation of the relation of birds and mammals to the foot-and-mouth disease. The latter was occasioned by the continued attempt to place the blame for the spread of the disease upon wild birds and mammals. In the case of the Merced outbreak, ducks and sea gulls were accused. Although many migratory ducks were found on infected areas, yet the disease failed to develop along the line of flight and no positive evidence could be found. Certain control measures involving buzzards were advocated near Merced.

An epidemic among predatory animals in El Dorado County during the spring of 1924 was found to be the result of rabies, as was shown by a positive test made on a California gray fox.

The department continues to compile data on the annual deer kill, on hunting accidents and on the work of the scientific collector.

Respectfully submitted.

HAROLD C. BRYANT,
In charge Education, Publicity and Research.

SACRAMENTO DISTRICT REPORT.

The Honorable Board of Fish and Game Commissioners of the State of California.

GENTLEMEN: Moving of the board office to Sacramento occasioned considerable reorganization and expansion of the office force. Practically all of the general routine work of the Commission is now handled through this office.

Deputies in this division, like those in other parts of the state, have greater areas to patrol than those in most other states. Complaints as to law enforcement come largely from those who do not realize the impossibility of being at every place where a violation occurs when one man has to cover two counties. A larger patrol force is greatly needed.

FIG. 18. Ineffective screening of an irrigation ditch was responsible for this loss of fish life in Butte County. More than 2100 sunfish are shown in the picture. Photograph by A. E. Culver.

During the biennial period ending June 30, 1924, this division has had to deal with many difficult conservation problems. Chief among them, involving this division, has been the problem presented by a cement power ditch on the American River which menaced the lives of hundreds of deer passing between their winter and summer ranges. It took considerable experimentation to figure out means of getting the deer safely across the canal. The power company cooperated splendidly in rescuing deer and immediately began the construction of a fence which will prevent recurrence another year.

One serious problem in this division is found in the numerous projects where streams are wholly diverted from their channels for power purposes. Seldom is proper consideration given the fish thus destroyed. We sincerely trust that companies concerned will not divert all the waters in the streams but will permit sufficient water to flow in the main channels to insure the maintenance of trout life. The South Fork of the American River is one of the best trout streams of the state that is available to the large centers of population. It is useless to plant nearly a million trout in this stream and its tributaries if the water in its channel is allowed to be diverted.

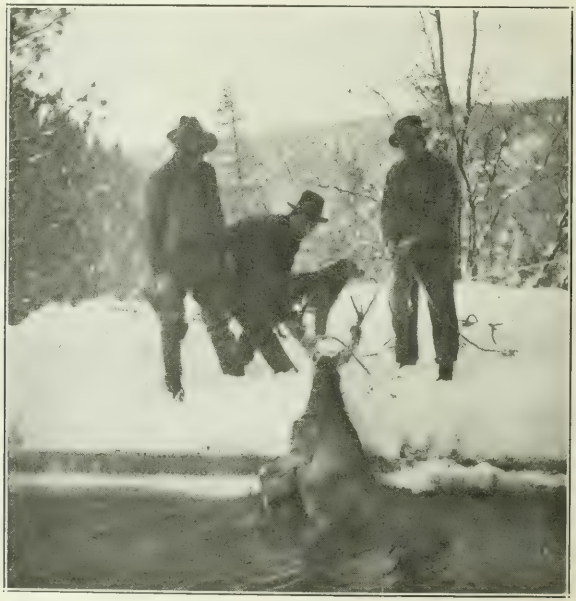


FIG. 19. Rescuing deer from a power ditch on the American River. Until provision was made for safe crossing of migrating deer many were drowned or frozen and hundreds had to be rescued. Photograph by Euell Gray.

Since much of the best shooting ground for waterfowl, as well as the best deer country, is found within this district, the enforcement of law occupies an important place in our duties. Conservation sentiment in this district continues to expand, as is shown by the percentage of convictions for violations and the increase in the number of fines inflicted. California deputies each patrol a greater area of square miles than do the deputies of any other state. The force, moreover, is inadequate as compared with conditions in other states. Residents and visitors are now beginning to realize what a great asset fish and game are to the community. In years past few arrests were made and it was almost impossible to secure a conviction by jury even in the face of strong and conclusive evidence. How different today! The Commission now fearlessly submits the equity of the game laws to a judge or jury. Due to the steadily-growing belief of our best citizens that the fish and game laws are of equal value with other laws on our statute books, the Commission and its officers receive the hearty cooperation of the county prosecutors and justices.

A glance at the comparative chart on page 12 will show the tremendous burden placed upon our law enforcement deputies. The land area of California comprises 153,650 square miles and has less than eighty deputies to patrol its land and water areas and enforce its fish and game laws, besides it has nearly 1200 miles of coast line. Each California deputy's share of patrol is over 1387 miles, 810 acres of land, and more than 360 acres of freshwater streams and about 11,810 acres of lakes. New York state with but 46,070 square miles has 143 more salaried deputies than has California. The New England states with the addition of New York, Ohio and Delaware comprise less area than California, but have 436 wardens. These states expend $794,028, as compared with California's expenditure of $102,169 for warden service. Yet there are some who are prone to criticise the Commission for not detecting every violation of the fish and game laws.

Respectfully submitted.

GEORGE NEALE,
In charge.

SAN FRANCISCO DISTRICT REPORT.

The Honorable Board of Fish and Game Commissioners,
State of California.

GENTLEMEN: The past two years have noted few changes in game conditions in the San Francisco District. The biennial period, however, has been a severe one for trout on account of the fact that the rainfall throughout the state was practically half normal and in many places even less than that. Streams that have never failed in previous years have been without water. Very few of the coast streams carried enough water to clear the bars at the mouths, with the result that few steelhead were able to make their way into the lagoons, and even when they did the water was so low they could not reach the spawning grounds.

In certain streams fishing was excellent at the opening of the season the first of May. One of these, the Gualala, in Sonoma County, had

FIG. 20. A scene on the Klamath River above the Copco dam. Photograph by J. O. Snyder.

particularly good fishing during the entire month of May. The river was closed and the fish that were in the lagoon could not make their way into the ocean. One Sunday there were 135 limits taken, the fish measuring from 8 to 10 inches in length. Many limits were taken in less than an hour's time. There were so many fish in the lagoon that by the first of June the fish caught were very poor, there being insufficient feed in the stream to take care of them.

The dry season will have a very serious effect on the trout streams of the district. To bring conditions back to normal will require heavy stocking on the part of the Commission. It is hoped that with the return of normal rainfall the ocean steelhead will return and assist in stocking the coast rivers. The shortage of rain, however, is not entirely without some benefit. Predatory fish, such as suckers and hardheads, have been cleared out of many trout streams, and if the contention of many fishermen is true that these species prey largely on trout, newly planted trout will have nothing to do but to grow fat for the anglers.

Duck shooting during the biennium was excellent everywhere except in the San Joaquin Valley, where water conditions were not normal. In the Suisun marsh, the season of 1923-24 was as good as the most enthusiastic duck hunter could desire.

The Fish and Game Commission is severely criticized for not entirely stopping the sale of ducks. Few hunters realize how great a task it is to control a matter of this sort. There are bootleggers in ducks as well as other things, we will admit, but as a matter of fact the number of ducks sold in San Francisco now does not equal five per cent of those sold before the nonsale law was adopted. In San Francisco in the old days there were sold every season from three to five hundred thousand ducks. There were game transfer companies in operation, with the permission of the courts, that handled thousands of birds

each day. All of this has been stopped. The comparatively few birds that are now sold are smuggled into San Francisco by automobile and are peddled to those who are willing to take a chance. Restaurants and hotels are searched repeatedly and seldom do the deputies find in excess of the bag limit. The sale of ducks in the field is even more difficult to control. Market hunters will continue to sell birds to unlucky hunters. Such sales are between man and man and it is practically impossible to secure evidence that would warrant the taking of anyone into court.

Contrary to many reports, quail have not materially decreased during the past two years. More or less quail shooting can be had in every county of the state. Recently a well informed hunter from San Benito County was in the San Francisco office discussing conditions in that county. His estimate as to the number of quail in San Benito County was not less than 100,000 and not more than 200,000 birds. Fortunately, quail are good breeders. The average clutch of eggs is better than 15. With 100,000 birds or 50,000 pairs as breeding stock, and 15 eggs per pair, in that county alone we have a potential flock of 750,000 quail for the hunters to harvest. Even if only one-tenth of this number of young birds reach maturity, it must be admitted that San Benito County is well supplied with quail. Valley quail can adapt themselves to civilization better than almost any other game bird. You need not go farther than Golden Gate Park or any other similar park in our state to have this fact proved. Quail, as years go by, are becoming more and more educated as to the ways of the hunter and it is largely for this reason that complaints are received that quail are decreasing. In most sections of the state, as soon as a shot is fired, the quail take to the high brush where it is practically impossible for hunters to do any shooting.

The annual kill of deer in California is between 15,000 and 20,000. Deer hunting has increased largely on account of the ease with which the deer country can be reached by automobile. One of the most serious crimes that we have to contend with is the killing of deer at night by spotlight. Night hunters do not care whether they kill buck, doe or fawn, for they realize that it is extremely difficult to catch them. A deputy must be at the right spot at the right time, otherwise it is practically useless to go into court. We know of no law that can be drafted that will make it easier to control this illegal work. The present law is as strong as any law could be made. The only way that the work can be stopped is to put more men into the field.

The respect that people in general have for the laws on our statutes is proportionate to the ability of the government of the state to enforce these laws. Without proper enforcement any law will soon become obsolete and will be broken by otherwise high class citizens. The enforcement of the game laws is similar to the enforcement of all other laws, easier than some, perhaps, for game law violations are committed for the most part by those who fish and hunt or whose business brings them into direct contact with the law and not by citizens as a whole. Our California laws, with very few exceptions, are as good or better than the fish and game laws in other states. The laws are reasonable and are not opposed by those who take conservation seriously. There is, however, a considerable class who hunt and fish who are meat hunters and not sportsmen. Such men care nothing for

tomorrow. If they had the opportunity, they would kill the last quail, duck, or deer and then brag about it for the remainder of their lives. Such men cannot be reached by appealing to their finer sensibilities but must be educated through the courts. This education can only be accomplished by having men in the field to enforce the laws, who are trustworthy in every particular, who have the backing of the judges, and the assistance of all good sportsmen. Day by day the sentiment for the enforcement of the game laws is getting better and better. Heavier fines are imposed and more and more violators are convicted, but the best results can only be obtained by having a greater number of active game wardens working at all hours of the day and night. It is unreasonable to expect one man to keep an area of many hundreds of square miles free from violations. Those who hunt are increasing year by year and make no complaint regarding the payment of a dollar for a license. If the number of hunters increase, so should the number of wardens increase. The more seriously the laws are enforced, the more seriously will violations be considered. The penalty for violating a game law can be made as high as the conscience of the justice of the peace before whom the violator is taken, will allow. Fines as high as $500 may be imposed and in addition a jail sentence may be given. In counties where heavy fines are imposed, there is a decided improvement in conditions. In other counties where the minimum fine is the rule, violations are more frequent. Many individuals are willing to take a chance on killing game during the closed season if when taken to court they will only have to pay $25; but if there was a probability of their having to pay somewhere near $500, they would not take a chance.

The work of the deputies in the San Francisco District has, for the most part, been entirely satisfactory. The general public has no conception of the long hours that a serious deputy puts in. It is not everyone who can make good in law enforcement work. It requires a peculiar training and fitness to make good as a game warden. The most discouraging thing that can happen to a deputy is to take a good case before a justice of the peace and have the defendants liberated or made to pay a petty fine.

More wardens, better cooperation of the judges, and the active assistance of sportsmen will assure game in California for years to come.

During the last two years fines totalling $32,995 were imposed in the San Francisco District. Judge Ray Griffin of Redwood City imposed fines amounting to $3,455 in his court. Other judges in various parts of the district did almost as well. One deputy working in San Mateo arrested defendants who were assessed a total of $4,215. Another deputy in Santa Cruz County had fines to his credit in the amount of $3,675. A third deputy in Marin County had $3,025 to his credit. Fines of $100 were not unusual. Some of the most noteworthy cases by deputies working in this district were as follows:

August 13, 1922, Judge Griffin of Redwood City fined Felix Doer and John Perasso $250 each for killing a doe; December 10, 1922, Judge Whipple of Fort Bragg sent Amador Mecidas to jail for 180 days for using a set net; March 11, 1923, Judge Griffin fined P. S. Bogani $200 for having illegal abalones in possession; April 9, 1923, Judge Wallace

of Salinas fined T. Kohanhoni, a second offender, $150 for the possession of illegal Pismo clams; May 17, 1923, Judge Evans of Loleto fined Fred Simmons $150 for killing a deer during the closed season; July 30, 1923, Judge Griffin fined Joe Trupiano $200 for possession of illegal abalones; August 14, 1923, Judge Boyd of Plantation fined R. F. Webb and D. S. Cloughn $100 each for killing a fawn; September 2, 1923, Judge Snow of Napa fined Manuel Lopez and Tony Alvorez $100 each for killing a fawn; October 21, 1923, Judge Johnson of Daly City fined four Italians $450 for taking 133 song birds in an Italian bird net; April 25, 1924, Judge Jacks of San Francisco fined Paladini Fish Company $250 for having small striped bass in possession; May 25, 1924, Judge McGuinness of Dunsmuir fined the same fish company $500 for shipping small bass to Portland; June 19, 1924, Judge Rudolph of Novato fined John Alberti $300 for killing illegal deer.

Respectfully submitted.

J. S. Hunter,
In charge.

LOS ANGELES DISTRICT REPORT.

The Honorable Board of Fish and Game Commissioners of the State of California.

Gentlemen: Geographically comprising but the lower third of California, this southern division, during the biennial period ending June 30, 1924, has had to deal with the most spectacular population growth ever experienced anywhere over an equal area, bringing upon us an even greater than proportional gain in outdoor sporting enthusiasm.

Inevitably, this enormously has increased our responsibilities, far beyond capacity of the dollar-unit of license income adequately to finance meeting such demands by the general expansion in every department thereby indicated as necessary.

That these primary outdoor-attraction assets have assumed a new and greater importance in their ever more valuable relation to the general public welfare, scarcely needs suggestion excepting to the ever-shrinking minority which sees in fish and game pursuit only a pastime of our large leisure classes, and with more wilful perversity, persists in ignoring the enormous material, physical and psychological worth of wild-life to the entire commonwealth of California.

Our guiding principle during these troublous times steadfastly has remained the greatest general good, not only to the sporting classes most directly interested in conserving fish and game attraction-assets through their loyal and liberal support of our work with their hunting and angling licenses, but also to the non-sporting public. Through upkeep of these outdoor resources, so alluring to sportsmen of other older Eastern states where conservation has been less forehanded than here, our wild-life has called countless thousands of well-to-do men this side the Sierras to invest themselves, their families and their lifetime accumulations in the material up-building of this state. Yet, the nonsporting citizenry of California in this matter still continues enjoying the unique role of better than incidental beneficiary without

cost. The licenses of his sport-loving friends at an all-too-moderate dollar annual privilege-tax, have paid for everything the commonwealth has done in behalf of rod and gun attractions until today licensed hunters and anglers stand more than ever ready to double the dollar and do the job to the limits of what more money could accomplish.

Fig. 21. Klamath River Steelhead trout. Photograph by George Neale.

Conservation of fish and game, being carried on entirely by popular support of a minority, is dependent upon a favorable public sentiment for its financing to an even greater degree than any other self-supporting activity undertaken under state direction. The history of wild-life work in America is a chronicle of activities primarily initiated by sportsmen in behalf of sportsmen and paid for by sportsmen; since under no other system of general appropriation from tax funds has anything of lasting consequence ever been accomplished.

Over fifteen years ago, California's leading sportsmen, with commendable foresight, saw this great truth, and shot to center with the Hunting License Act, followed in due course with a similar tax upon which has grown, all too gradually, the considerable superstructure of an organization which up to date at least has accomplished the demonstration that money in large amounts intelligently invested toward the protection and propagation of fish and game, can long delay its extermination and the extinction of its allied industries, if not also perpetuate it. That, the future alone can determine; but present policy is being shaped to mould the conservation program along the indicated lines of civilization, and thus adapt it to the now assured destiny of southern California—intensive development.

In face of these facts, the importance of broad popular education to the economic as well as sentimental value of fish and game hardly could be ignored; so the last two years have seen no slackening in such activities throughout southern division work. Our veteran field patrolmen have consistently joined therein at every opportunity; liberal advertisement has been given of law-enforcement activities to the end that the law-abiding majority might know how much is being done to protect their interests against the careless or selfish who respect only the consequences of violation. That long years of patient effort seem at last to have borne some fruit in fostering popular support for earnest wild-life effort, is one of the gratifying demonstrations of the past biennium which offsets many a disappointment.

Transportation of sport-seekers and their housing has stimulated a huge expenditure in itself, being an enormous and duly-recognized contributor to the automotive industry, now conceded to be among the biggest businesses of the country. Perhaps a better idea of the financial importance of our outdoor assets may be derived from learning that this year the lower third of this state will license not far from a fifth of a million sport-seekers, each of whom, on a conservative estimate, will put into general circulation through the exercise of this dollar privilege, at least another hundred dollars in transportation, guns, ammunition, fishing-tackle, camping goods, general equipment; patronage of resorts and more beyond mention, totaling perhaps 20 million dollars.

Growing interest of other organizations than the Fish and Game Commission in wild-life, is another outstanding feature of the past biennium, due no doubt in considerable degree to desire of helping temporarily over a recognized emergency, of which expense an expected increase in sporting license will relieve the various now cooperating counties another year. Such cooperation, where genuine and non-competitive, nor losing sight of legitimate objectives, has been warmly welcomed as adding materially to the enforcement of law. Eventually the Fish and Game Commission expects in southern California to relieve these county cooperating agencies of any expense in fish and game conservation, just as the Supreme Court already has relieved the counties of any responsibility in fish and game regulation by consistently deciding that such regulation of hunting and fishing remains the special province and prerogative of the biennial legislatures, thereby lending at least some stability to these restrictions and allowing the sporting public as well as industries allied thereto, the opportunity to

learn what regulations were to govern them until the next legislative session, at least.

Suffice it to say that the ever-increasing needs of southern California these last two years have been met as far as we were able, and not as we would have met them; but rather, as our controlling limitations required.

Prosecution of petty offenders against the technicalities of the hunting and fishing restrictions is of course a necessary part of the day's work in wild-life conservation and must go on, lest the voluntary support of the vast majority in observing the laws they believe in, be prejudiced by seeing too large a proportion of persistent violators escaping the punishment they deserve. For this purpose, an elaborate and expensive patrol organization must be maintained. To the violating class, such constitutes the outstanding activity of the sportsmen's Fish and Game Commission; but to the vast majority who support the law consistently because they know that without restriction, fish and game speedily would become but a bad memory, real conservation represents bringing all the people to appreciation of what it actually means.

The fostering and encouragement of sporting resorts open and accessible to all the people has played a prominent part in southern division activities during the past two years, it also being truly constructive conservation of a particularly important nature in view of the self-supporting nature of all wild-life work in California. Herein also, the general public has proved a very direct party-at-interest, since whatever contributes to the outdoor attractiveness of the state can not fail to benefit every business in it, not to mention the inestimable advantages of facilitating healthful outdoor recreation.

As one result of such work, we see a steadily-swelling increase in number of hunting and fishing resorts where the average sportsman of moderate means may enjoy himself at reasonable cost. There is a very common tendency amongst promoters to found their propositions upon the quite generally exploded theory of exclusiveness, forgetting that volume of business is the surest prospect of lasting profit. The enormous success of our largest resorts has been built upon a broad policy of serving all comers, since the millionaire class naturally is in the minority.

Respectfully submitted.

E. L. Hedderly,
In charge.

APPENDIX

FISH DISTRIBUTION BY COUNTIES, SEASON 1922.

Mount Shasta Hatchery.

County	Rainbow	Loch Leven	Eastern brook	Large lake	German brown	Salmon
Alameda	76,000				10,000	
Alpine	60,000	135,000	60,000		52,500	
Amador	30,000		125,000		50,000	
Butte	216,000	120,000	53,000			
Calaveras	120,000	425,000	48,000		258,000	
Colusa	40,000	30,000				
Del Norte	50,000		60,000	100,000		
El Dorado	227,000	389,300	195,000		192,000	
Fresno	350,000	590,000	170,000		139,000	
Glenn	17,000	15,000				
Humboldt	200,000		10,000			
Kern		158,000	50,000		50,000	
Lake	60,000					
Lassen	15,000	10,000				
Madera	160,000	90,000	50,000			
Marin	75,000	75,000				
Mariposa	85,000	130,000	56,000		65,000	
Modoc	143,000	33,000	47,500			
Monterey	227,000	180,000			25,000	
Napa	55,000	100,000				
Nevada	403,000	723,500	160,000		50,000	
Placer	202,500	277,500	191,500		6,000	
Plumas	138,000	119,000	84,500			
San Benito	50,000	72,000	5,000		22,000	
San Luis Obispo	80,000	42,500	8,000			
San Mateo	95,000		2,000			
Santa Barbara	67,500	22,500	10,000			
Shasta	338,500	388,000	10,000		50,000	
Sierra	20,000	35,000	20,000			
Siskiyou	193,000	284,500	197,500		108,000	12,311,000
Sonoma	65,000	4,000				
Tehama	89,500	62,500	50,000			
Trinity	85,000	28,000	57,000			
Tulare	20,000	150,000	25,000		20,000	
Tuolumne	385,000	630,000	145,000		205,000	
Totals	4,438,000	5,319,300	1,890,000	100,000	1,302,500	12,311,000

FISH DISTRIBUTION BY COUNTIES, SEASON 1922—Continued.

Fall Creek Hatchery.

County	Rainbow	Salmon
Siskiyou	495,000	3,331,000

Mount Whitney Hatchery.

County	Rainbow	Loch Leven	Steelhead	Eastern brook
Fresno	16,000			
Inyo	89,000	95,000	98,000	40,000
Kern	210,000	40,000		30,000
Los Angeles	195,000	10,000	70,000	
Mariposa	44,500	17,500	55,500	17,500
Mono	222,000		15,000	10,000
Orange	52,500	25,000	35,000	
Riverside	70,000	15,000	15,000	
Santa Barbara	8,000		80,000	
San Bernardino	11,000		5,000	
San Diego	110,000		145,000	
Tulare	246,000	85,000	60,000	20,000
Ventura	187,500	15,000	157,500	
Totals	1,461,500	302,500	736,000	117,500

Fort Seward Hatchery.

County	Rainbow	Steelhead	Large lake	Black spotted	Cutthroat	Salmon
Humboldt	294,280	425,000	71,690	146,090	99,690	1,997,430

Ukiah Hatchery.

County	Rainbow	Steelhead
Humboldt	194,500	50,000
Mendocino	182,000	325,000
Santa Cruz	6,000	
Sonoma	55,000	150,000
Totals	437,500	525,000

Tahoe Hatchery.

County	Rainbow	Steelhead	Black spotted	Large lake
Alpine				75,000
El Dorado	400,000	60,000	50,000	
Nevada	10,000			45,000
Placer	565,000	40,000	405,000	
Sacramento			25,000	
Sierra				25,000
Totals	975,000	100,000	480,000	145,000

Tallac Hatchery.

County	Large lake	Black spotted
El Dorado	270,000	190,000

FISH DISTRIBUTION BY COUNTIES, SEASON 1922—Concluded.

Domingo Springs Hatchery.

County—	Rainbow
Plumas	437,300
Tehama	75,000
Total	512,300

Clear Creek Hatchery.

County—	Rainbow
Lassen	400,000
Plumas	25,000
Total	425,000

Snow Mountain Station.

County—	Steelhead
Mendocino	109,000

Bear Lake Hatchery.

County—	Rainbow
San Bernardino	1,290,100

North Creek Station.

County—	Rainbow
San Bernardino	750,000

Brookdale Hatchery.

County—	Steelhead
San Mateo	30,000
Santa Clara	251,000
Santa Cruz	578,000
Total	859,000

Feather River Hatchery.

County	Rainbow	Steelhead
Butte	10,000	----------
Plumas	348,000	132,000
Sierra	30,000	100,000
Yuba	102,500	15,000
Totals	490,500	247,000

Wawona Hatchery.

County	Rainbow	Steelhead
Mariposa	298,900	140,300

Kaweah Hatchery.

County	Rainbow	Steelhead
Tulare	295,000	140,000

FISH DISTRIBUTION BY COUNTIES, SEASON 1923.

Mount Shasta Hatchery.

County	Rainbow	Loch Leven	Steelhead	Eastern brook	Large lake	German brown	Salmon	Mackinaw
Alameda	20,000		5,000					
Alpine	75,000	144,000	10,000	38,000				
Amador	60,000	86,000	50,000	100,000		50,000		
Butte	187,000	135,000	40,000	38,500				
Calaveras	145,000	245,000	130,000	92,000		155,000		
Colusa	70,000	50,000	60,000	35,000				
Del Norte	40,000			70,000	90,000		40,000	
E Dorado	194,000	398 500	70,000	238,500		182,500		
Fresno	336,000	230,000	135,000	177,000		87,000		
Glenn	40,000	50,000		20,000				
Kern	150,000			80,000				
Lake						50,000		60,000
Lassen	10,000	10,000		10,000				20,000
Madera	79,000	85,000	30,000	60,000				
Marin	25,000	50,000	25,000					
Mariposa	120,000	68,000	50,000	120,000		110,000		
Mendocino						50,000		
Modoc	71,000	80,000	9,000	50,500				
Monterey	352,500	71,000	35,000					
Mono	15,000	50,000	10,000	20,000				
Napa	10,000		10,000					
Nevada	415,000	677,000	132,500	359,000		115,000		
Placer	177,000	232,500	35,000	294,000		12,500		
Plumas	168,000	145,000	90,000	148,500				
San Benito	27,500	44,000	20,000			40,000		
San Luis Obispo	100,000	114,000	50,000	8,000				
San Mateo	50,000		45,000	10,000				
Santa Barbara	40,000	26,000	20,000	10,000				
Santa Clara			10,000	10,000				
Santa Cruz	10,000		20,000	32,000				
Shasta	287,500	188,000	65,000	47,500		50,000		
Sierra	18,000	25,000	7,500	37,500				
Siskiyou	154,000	580,050	58,000	305,050		50	12,089,000	
Solano		100,000	50,000					
Sonoma	35,000	4,000						
Tehama	87 000	110,000	115,000	22,000				
Trinity	70,000	50,000	50,000	60,000				
Tulare	30,000	220,000	30,000	74,000				
Tuolumne	355,000	552,000	315,000	323,000		350,000		
Yolo						10,000		
Totals	4,020,500	4,820,050	1,782,000	2,890,050	90,000	1,262,050	12,129,000	80,000

Fall Creek Hatchery.

County	Rainbow	Salmon
Siskiyou	305,000	3,550,000

Mount Whitney Hatchery.

County	Rainbow	Loch Leven	Steelhead	Eastern brook
Fresno	10,000			
Inyo	216,000	171,000	318,000	110,000
Kern			280,000	
Los Angeles	130,000	35,000	113,000	
Madera			50,000	
Mono	221,000	51,000	523,000	54,000
Orange	8,000	15,000	10,000	
Riverside	79,000	35,000	79,000	5,000
San Diego	52,500	12,500	225,000	
San Luis Obispo			20,000	
Tulare	90,000	100,000	110,000	40,000
Ventura	90,000	15,000	130,000	
Totals	896,500	434,500	1,858,000	209,000

FISH FISTRIBUTION BY COUNTIES, SEASON 1923—Continued.

Fort Seward Hatchery.

County	Rainbow	Steelhead	Cutthroat	Salmon	Large lake
Humboldt	432,560	1,480,000	156,260	2,177,120	98,260
Mendocino	190,000	435,000			
Siskiyou	20,000				
Trinity	25,000	25,000			
Totals	667,560	1,940,000	156,260	2,177,120	98,260

Ukiah Hatchery.

County	Rainbow	Steelhead
Lake	20,000	230,000
Mendocino	80,000	315,000
Napa		85,000
Sonoma	99,000	186,000
Totals	199,000	816,000

Snow Mountain Station.

County—	Steelhead
Mendocino	50,000

Tahoe Hatchery.

County	Steelhead	Large lake
El Dorado	120,000	160,000
Nevada		30,000
Placer	285,000	575,000
Sierra	40,000	25,000
Totals	445,000	790,000

Tallac Hatchery.

County	Steelhead	Large lake
Alpine		60,000
El Dorado	805,000	495,000
Totals	805,000	555,000

Domingo Springs Hatchery.

County—	Rainbow
Lassen	22,000
Plumas	451,640
Shasta	12,000
Totals	485,640

Clear Creek Hatchery.

County—	Rainbow
Lassen	350,000
Plumas	126,905
Total	476,905

FISH DISTRIBUTION BY COUNTIES, SEASON 1923—Concluded.

Bear Lake Hatchery.

County	Rainbow	Steelhead
San Bernardino	1,101,000	80,000

North Creek Station.

County—	Rainbow
San Bernardino	600,000

Wawona Hatchery.

County	Rainbow	Steelhead
Mariposa	199,300	249,000

Kaweah Hatchery.

County	Rainbow	Steelhead
Tulare	195,000	245,000

Brookdale Hatchery.

County—	Steelhead
Santa Clara	300,000
Santa Cruz	550,000
Totals	850,000

Feather River Hatchery.

County	Rainbow	Steelhead
Butte		13,000
Plumas	228,880	347,000
Sierra	98,000	190,000
Yuba	60,000	60,000
Totals	386,880	610,000

SUMMARY OF FISH DISTRIBUTION, SEASON 1922-1923.

Hatchery	Rainbow	Loch Leven	Steelhead	Eastern brook	German brown
Bear Lake	2,391,100		80,000		
Brookdale			1,709,000		
Clear Creek	901,905				
Domingo Springs	997,940				
Fall Creek	800,000				
Feather River	877,380		857,000		
Fort Seward	961,840		2,365,000		
Kaweah	490,000		385,000		
Mount Shasta	8,458,500	10,139,350	1,782,000	4,780,050	2,564,550
Mount Tallac			805,000		
Mount Whitney	2,358,000	737,000	2,594,000	326,500	
North Creek	1,350,000				
Snow Mountain			159,000		
Tahoe	975,000		545,000		
Ukiah	636,500		1,341,000		
Wawona	498,200		389,300		
Totals	21,696,365	10,876,350	13,011,300	5,106,550	2,564,550

SUMMARY OF FISH DISTRIBUTION, SEASON 1922-1923—Concluded.

Hatchery	Large Lake	Cutthroat	Black spotted	Mackinaw	Salmon
Bear Lake					
Brookdale					
Clear Creek					
Domingo Springs					
Fall Creek					6,881,000
Feather River					
Fort Seward	169,950	255,950	146,090		4,174,550
Kaweah					
Mount Shasta	190,000			80,000	24,440,000
Mount Tallac	825,000		190,000		
Mount Whitney					
North Creek					
Snow Mountain					
Tahoe	935,000		480,000		
Ukiah					
Wawona					
Totals	2,119,950	255,950	816,090	80,000	35,495,550

RECAPITULATION, SEASON 1922-1923.

Trout	56,527,105
*Salmon	35,495,550
Grand total	92,022,655

*There were 4,041,000 salmon hatched from eggs collected at the Klamathon station during the past winter and spring that will not appear in the statistical report until the next biennial report of the Commission. There would have been a great many more salmon eggs taken had not the racks been washed out by the floods.

LICENSE SALES.

HUNTING LICENSE SALES, YEAR 1922-1923.

Counties	Total sales	Citizen	Non-resident	Alien	Declarant alien
Alameda	$11,802	$11,347	$30	$225	$200
Alpine	116	56	60		
Amador	887	862		25	
Butte	4,548	4,503		25	20
Calaveras	1,123	1,123			
Colusa	2,368	2,303	10	25	30
Contra Costa	3,115	2,920		175	20
Del Norte	745	665	80		
El Dorado	1,726	1,631	70	25	
Fresno	11,100	10,845	10	175	70
Glenn	1,777	1,707	50		20
Humboldt	5,113	4,803	10	150	150
Imperial	1,400	1,400			
Inyo	1,291	1,281	10		
Kern	7,064	6,934		50	80
Kings	1,853	1,843			10
Lake	1,447	1,407	20		20
Lassen	2,029	1,869	140		20
Los Angeles	41,928	41,223	100	475	130
Madera	1,580	1,460	10	50	60
Marin	2,046	2,016			30
Mariposa	284	284			
Mendocino	3,725	3,460		75	190
Merced	2,702	2,537		125	40
Modoc	2,710	1,425	1,260	25	
Mono	307	147	160		
Monterey	3,062	2,947		75	40
Napa	2,695	2,375		50	270
Nevada	1,229	1,094	80	25	30
Orange	4,383	4,373			10
Placer	2,722	2,382	60	100	180
Plumas	1,322	1,252	50		20
Riverside	2,986	2,966	10		10
Sacramento	6,752	6,067	210	275	200
San Benito	1,130	1,030	10		90
San Bernardino	4,823	4,778	20	25	
San Diego	8,267	8,177	10	50	30
San Francisco	18,453	14,993	30	1,300	2,130
San Joaquin	6,551	6,291		100	160
San Luis Obispo	2,682	2,602		50	30
San Mateo	1,842	1,707		25	110
Santa Barbara	3,518	3,448	20		50
Santa Clara	6,759	6,474		75	210
Santa Cruz	3,256	3,011		25	220
Shasta	2,563	2,458	10	25	70
Sierra	209	209			
Siskiyou	5,075	3,960	640	125	350
Solano	2,949	2,864		25	60
Sonoma	7,786	7,096		450	240
Stanislaus	3,998	3,878		50	70
Sutter	833	823			10
Tehama	1,960	1,940	20		
Trinity	981	961			20
Tulare	6,128	5,918	10		200
Tuolumne	1,945	1,865	10		70
Ventura	2,906	2,906			
Yolo	2,379	2,249	10	50	70
Yuba	2,129	2,119			10
Reno, Nevada	90		90		
Total sales	$239,149	$225,264	$3,310	$4,525	$6,050
Total number of licenses	226,381	225,264	331	181	605

Citizen, $1; non-resident, $10; declarant alien, $10; alien, $25.

HUNTING LICENSE SALES, YEAR 1923-1924.

Counties	Total sales	Citizen	Non-resident	Alien	Declarant alien
Alameda	$13,140	$12,635	$30	$175	$300
Alpine	128	78	50		
Amador	849	814	10	25	
Butte	5,239	5,114		75	50
Calaveras	1,038	1,038			
Colusa	2,414	2,384	10		20
Contra Costa	3,273	3,188		25	60
Del Norte	966	781	150	25	10
El Dorado	1,657	1,572	50	25	10
Fresno	10,469	10,339	10	50	70
Glenn	1,849	1,759	90		
Humboldt	5,435	5,000	20	225	190
Imperial	1,138	1,088		50	
Inyo	1,377	1,377			
Kern	6,737	6,587	10	50	90
Kings	1,674	1,664			10
Lake	1,498	1,488			10
Lassen	2,082	2,022	30		30
Los Angeles	54,047	53,252	130	425	240
Madera	1,469	1,394		25	50
Marin	1,950	1,930			20
Mariposa	281	281			
Mendocino	3,805	3,665			140
Merced	2,639	2,549		50	40
Modoc	4,226	1,566	2,640		20
Mono	255	165	90		
Monterey	3,914	3,789		75	50
Napa	2,715	2,385	30	50	250
Nevada	1,215	1,120	30	25	40
Orange	5,199	5,189			10
Placer	2,813	2,493	10	100	210
Plumas	1,456	1,426	10		20
Riverside	3,867	3,847	10		10
Sacramento	9,174	8,164	250	400	360
San Benito	1,224	1,144			80
San Bernardino	5,133	5,068		75	10
San Diego	8,725	8,640	40	25	20
San Francisco	19,370	15,375	110	1,425	2,460
San Joaquin	6,314	6,069		75	170
San Luis Obispo	2,891	2,731	10	100	50
San Mateo	1,956	1,721		75	160
Santa Barbara	3,690	3,485	30	75	100
Santa Clara	7,007	6,712		125	170
Santa Cruz	2,320	1,970		50	300
Shasta	2,591	2,466	30	25	70
Sierra	268	258			10
Siskiyou	5,272	4,257	430	175	410
Solano	2,049	2,999		50	
Sonoma	7,802	7,307	10	125	360
Stanislaus	4,099	3,969	20	50	60
Sutter	887	887			
Tehama	1,671	1,651	10		10
Trinity	968	923		25	20
Tulare	5,868	5,743		125	
Tuolumne	1,959	1,874	10	25	50
Ventura	3,044	3,034	10		
Yolo	2,412	2,262	10	50	90
Yuba	2,318	2,298			20
Total sales	$260,846	$244,986	$4,380	$4,550	$6,930
Total number of licenses	246,299	244,986	438	182	693

Citizen, $1; non-resident, $10; declarant alien, $10; alien, $25.

ANGLING LICENSE SALES, YEAR 1922.

(Sporting Fishing).

Counties	Total sales	Citizen	Non-resident	Alien
Alameda	$9,192	$8,895	$6	$291
Alpine	389	134	240	15
Amador	763	757		6
Butte	3,907	3,817	9	81
Calaveras	964	964		
Colusa	656	641		15
Contra Costa	1,522	1,498		24
Del Norte	558	540	18	
El Dorado	2,098	1,963	51	84
Fresno	10,765	10,222	21	522
Glenn	633	606		27
Humboldt	5,128	4,927	18	183
Imperial	371	371		
Inyo	2,778	2,661	66	51
Kern	3,008	2,963	9	36
Kings	1,145	1,088		57
Lake	578	569	3	6
Lassen	1,550	1,436	51	63
Los Angeles	31,734	31,077	162	495
Madera	1,203	1,170		33
Marin	1,011	1,011		
Mariposa	315	315		
Mendocino	2,416	2,371		45
Merced	1,216	1,204	6	6
Modoc	884	866	18	
Mono	782	383	333	66
Monterey	1,790	1,775	3	12
Napa	1,679	1,661	3	15
Nevada	2,014	1,807	81	126
Orange	2,213	2,201	6	6
Placer	2,456	2,267	99	90
Plumas	2,036	1,895	48	93
Riverside	1,818	1,755	12	51
Sacramento	8,534	6,755	141	1,638
San Benito	403	400		3
San Bernardino	6,407	6,380	9	18
San Diego	3,893	3,866	6	21
San Francisco	16,136	14,816	270	1,050
San Joaquin	5,519	5,102		417
San Luis Obispo	1,716	1,686	6	24
San Mateo	775	772		3
Santa Barbara	2,915	2,897	9	9
Santa Clara	5,296	5,248	3	45
Santa Cruz	2,774	2,696		78
Shasta	2,647	2,563	18	66
Sierra	559	523	12	24
Siskiyou	4,705	4,258	264	183
Solano	2,296	2,170		126
Sonoma	4,846	4,726	12	108
Stanislaus	3,395	3,374	6	15
Sutter	348	333		15
Tehama	1,348	1,342	3	3
Trinity	617	608		9
Tulare	5,863	5,704	15	144
Tuolumne	2,153	2,042	18	93
Ventura	2,892	2,805	3	84
Yolo	772	745	3	24
Yuba	1,311	1,266	6	39
Reno, Nevada	990		990	
Yosemite Valley	1,056	918	138	
Total sales	$189,738	$179,805	$3,195	$6,738
Total number of licenses	183,116	179,805	1,065	2,246

Citizen, $1; non-resident, $3; alien, $3.

ANGLING LICENSE SALES, YEAR 1923.

(Sporting Fishing).

Counties	Total sales	Citizen	Non-resident	Alien
Alameda	$11,849	$11,510	$18	$321
Alpine	524	119	402	3
Amador	791	785	----------	6
Butte	4,572	4,449	21	102
Calaveras	982	470	3	9
Colusa	855	810	----------	45
Contra Costa	2,064	1,980	----------	84
Del Norte	627	582	36	9
El Dorado	2,360	2,222	63	75
Fresno	13,440	12,735	12	693
Glenn	730	724	----------	6
Humboldt	6,191	5,957	12	222
Imperial	334	334	----------	----------
Inyo	3,618	3,528	42	48
Kern	3,396	3,354	24	18
Kings	1,401	1,293	9	99
Lake	841	832	3	6
Lassen	1,939	1,837	27	75
Los Angeles	37,640	36,995	159	486
Madera	1,479	1,437	3	39
Marin	1,217	1,214	----------	3
Mariposa	147	144	----------	3
Mendocino	3,057	2,988	45	24
Merced	1,717	1,669	----------	48
Modoc	989	920	63	6
Mono	836	464	282	90
Monterey	2,632	2,563	12	57
Napa	2,069	2,021	6	42
Nevada	2,338	2,179	60	99
Orange	3,822	3,798	9	15
Placer	2,852	2,603	81	168
Plumas	2,529	2,364	45	120
Riverside	2,282	2,222	6	54
Sacramento	10,901	8,993	33	1,875
San Benito	483	477	----------	6
San Bernardino	8,642	8,558	21	63
San Diego	4,956	4,923	12	21
San Francisco	18,234	16,950	60	1,224
San Joaquin	7,770	7,266	----------	504
San Luis Obispo	1,932	1,896	3	33
San Mateo	1,107	1,095	----------	12
Santa Barbara	3,594	3,561	15	18
Santa Clara	6,303	6,258	3	42
Santa Cruz	3,243	3,129	6	108
Shasta	3,063	2,952	48	63
Sierra	715	676	21	18
Siskiyou	5,856	5,184	450	222
Solano	2,417	2,249	----------	168
Sonoma	5,873	5,780	12	81
Stanislaus	4,892	4,808	9	75
Sutter	614	602	----------	12
Tehama	1,635	1,611	15	9
Trinity	750	729	9	12
Tulare	6,633	6,477	9	147
Tuolumne	2,335	2,254	6	75
Ventura	3,370	3,343	3	24
Yolo	904	886	----------	18
Yuba	1,768	1,702	9	57
Reno, Nevada	1,434	----------	1,434	----------
Yosemite Valley	1,451	1,298	147	6
Total sales	$232,995	$221,259	$3,768	$7,968
Total number of licenses	225,171	221,259	1,256	2,656

Citizen, $1; non-resident, $3; alien, $3.

MARKET FISHERMEN'S LICENSE SALES.

Total sales, license year April 1, 1922, to March 31, 1923	$44,720 00
Total sales, license year April 1, 1923, to March 31, 1924	41,230 00

License fee: $10 to all persons.

TRAPPING LICENSE SALES.

Total sales, license year July 1, 1922, to June 30, 1923	$3,136 00
Total sales, license year July 1, 1923, to June 30, 1924	2,597 00

License fee: Citizens, $1; aliens, $2.

FISH PACKERS' AND WHOLESALE SHELL-FISH DEALERS' LICENSE SALES.

Total sales, license year July 1, 1922, to June 30, 1923	$1,170 00
Total sales, license year July 1, 1923, to June 30, 1924	1,240 00

License fee: Citizens, $5; aliens, $20.

GAME BREEDERS' LICENSE SALES.

Total sales, license year January 1, 1922, to December 31, 1922	$92 50
Total sales, license year January 1, 1923, to December 31, 1923	170 00

License fee: All persons, $2.50.

FISH BREEDERS' LICENSE SALES.

Total sales, license year January 1, 1922, to December 31, 1922	$45 00
Total sales, license year January 1, 1923, to December 31, 1923	50 00

License fee: All persons, $5.

DOMESTICATED FISH IMPORTERS' LICENSE SALES.

Total sales, license year January 1, 1922, to December 31, 1922	$5 00
Total sales, license year January 1, 1923, to December 31, 1923	5 00

KELP LICENSE SALES.

Total sales, year 1922	$10 00
Total sales, year 1923	None

License for term of one year from date of issue. Fee, $10.

VIOLATIONS OF THE FISH AND GAME LAWS.

GAME CASES.

	July 1, 1922, to June 30, 1923			July 1, 1923, to June 30, 1924		
	Number of arrests	Amount of fines and forfeitures imposed	Jail sentences imposed (days)	Number of arrests	Amount of fines and forfeitures imposed	Jail sentences imposed (days)
Violations, Hunting License Act	93	$1,483 50	50	130	$2,040 00	180
Deer—buy or sell; taking and possession, run with dogs, closed season; failure to retain horns and hide; over bag limit	93	3,310 00	100	125	5,493 00	695
Deer—taking and possession does, fawns, spike bucks	51	3,055 00	270	53	5,175 00	.....
Ducks—buy or sell; taking and possession closed season, over bag limit	52	2,060 00	30	61	2,845 00	240
Geese—taking and possession closed season, over bag limit	6	150 00	.....	9	175 00	.....
Mudhens—taking and possession closed season	1	25 00	.....	4	45 00	.....
Swans—taking and possession	.....	.....	.....	2	50 00	.....
Shorebirds—taking and possession	21	465 00	65	30	825 00	180
Doves—taking and possession closed season, over bag limit	24	665 00	.....	36	880 00	.....
Quail—taking and possession closed season, over bag limit	32	1,117 50	.....	51	1,425 00	190
Pheasants—taking, possession	4	250 00	.....	14	635 00	.....
Non-game birds—taking and possession	38	990 00	.....	42	1,360 00	.....
Trespass	19	195 00	.....	22	470 00	.....
Shoot wild game from automobile, power or sail boat; animal blind; illegal use of scull boat	8	220 00	30	31	885 00	60
Night hunting	34	1,000 00	.....	107	2,650 00	.....
Game refuge—hunting and possession of firearms	14	290 00	.....	22	375 00	.....
Sage hens—taking, possession, closed season, over bag limit	3	225 00	.....	.....	.....	.....
Rabbits—cottontail, brush; taking and possession closed season	19	435 00	90	18	500 00	.....
Grouse—taking and possession closed season	2	25 00	.....	.....	.....	.....
Pigeons, wild—taking and possession (no open season)	21	895 00	.....	2	50 00	.....
Squirrels, tree—taking and possession (no open season)	1	25 00	.....	3	100 00	.....
Mountain sheep—taking and possession (no open season)	1	250 00	.....	1	100 00	.....
Violations—fur trapping regulations	5	80 00	.....	4	70 00	.....
Miscellaneous cases	6	140 00	.....	3	75 00	.....
Total game cases	548	$17,351 00	635	770	$26,223 00	1,545

FISH CASES.

	July 1, 1922 to June 30, 1923			July 1, 1923 to June 30, 1924		
	Number of arrests	Amount of fines and forfeitures imposed	Jail sentences imposed (days)	Number of arrests	Amount of fines and forfeitures imposed	Jail sentences imposed (days)
Violations of Angling License Act	72	$1,545 00	95	65	$1,415 00	200
Violations of Commercial Fishing License Act	44	565 00		47	580 00	
Trout—taking and possession closed season, other than hook and line, over bag limit	128	3,122 50		77	2,836 00	20
Black bass—taking and possession closed season, over bag limit, undersized	17	400 00		15	950 00	
Sunfish, perch, crappie—taking and possession closed season	14	280 00		2	20 00	
Night fishing, illegal	8	195 00		28	595 00	
Fishing—within ½ mile of hatchery; within 250 feet of fishway; off dams	16	470 00		16	225 00	360
Striped bass—sale: closed season; undersized; excess bag limit	47	925 00	195	59	2,035 00	180
Salmon—sale: closed season; over bag limit; illegal spearing	5	200 00	50	16	550 00	1,800
Crabs—taking and possession closed season; undersized	20	440 00		32	665 00	
Clams—taking and possession closed season, over bag limit; undersized	96	3,485 00	210	117	3,940 00	120
Lobsters—taking and possession closed season; over bag limit; undersized	28	880 00	240	41	1,885 00	
Abalones—taking and possession closed season; over bag limit; undersized	85	2,385 00		146	4,990 00	90
Catfish—sale: undersized	2	50 00		1	20 00	
Halibut—undersized	3	75 00				
Barracuda—undersized	10	450 00		8	240 00	
Sturgeon—possession	2	50 00				
Nets, traps, lines—illegal use or possession	44	2,950 00	183	26	1,965 00	100
Obstructions in streams; failure to maintain fish screen				7	150 00	
Water pollution, use of explosive to take fish	4	200 00	120	7	800 00	150
Failure to keep commercial fishing data; destruction of food fishes	3	120 00		1		
Illegal shipment—fish; shell fish	2	25 00	30	6	275 00	
Miscellaneous cases	4	100 00		26	1,155 00	
Total fish cases	654	$18,912 50	1,123	743	$25,291 00	3,020

CASES JULY 1, 1922, TO JUNE 30, 1923.

	July, Aug., Sept.	Oct., Nov., Dec.	Jan., Feb., Mar.	Apr., May, June	Total
Convictions	247	247	208	258	960
Bail forfeited	18	28	2	16	64
Suspended sentences	22	34	18	24	98
Pending	9		2		11
Acquittals	3			1	4
Dismissals	6	7	9	9	31
Juvenile cases	3	7	13	11	34
Totals	308	323	252	319	1,202

CASES JULY 1, 1923, TO JUNE 30, 1924.

	July, Aug., Sept.	Oct., Nov., Dec.	Jan., Feb., Mar.	Apr., May, June	Total
Convictions	302	424	323	235	1,284
Bail forfeited	27	10	9	7	53
Suspended sentences	25	26	16	34	101
Pending	3	3	5	1	12
Acquittals	7	5	5	1	18
Dismissals	4	16	6	2	28
Juvenile cases	5	6	6		17
Totals	373	490	370	280	1,513

RECAPITULATION.

	Number of arrests	Fines and forfeitures imposed	Jail sentences (days)
Fish cases, 1922-1923	654	$18,912 50	1,123
Game cases, 1922-1923	548	17,351 00	635
Totals, 1922-1923	1,202	$36,263 50	1,758
Fish cases, 1923-1924	743	$25,291 00	3,020
Game cases, 1923-1924	770	26,223 00	1,545
Totals, 1923-1924	1,513	$51,514 00	4,565
Recapitulation—			
1922-1923	1,202	$36,263 50	1,758
1923-1924	1,513	51,514 00	4,565
Totals	2,715	$87,777 50	6,323

TOTAL ARRESTS FOR A PERIOD OF TWENTY-TWO YEARS.

1902-1904	550
1904-1906	774
1906-1908	1,192
1908-1910	1,771
1910-1912	2,063
1912-1914	1,993
1914-1916	2,087
1916-1918	1,797
1918-1920	1,891
1920-1922	2,258
1922-1924	2,715

SEIZURES OF FISH, GAME AND ILLEGALLY USED FISHING APPARATUS.

	July 1, 1922 to June 30, 1923	July 1, 1923 to June 30, 1924	Total
Ducks	3,896	3,290	7,186
Geese	65	20	85
Shorebirds	43	36	79
Doves	68	143	211
Quail	77	16	93
Pheasants	3	7	10
Deer meat	1,258 pounds	2,091 pounds	3,349 pounds
Deer hides	5	3	8
Sage hens	27		27
Rabbits (cottontail-brush)	26	16	42
Wild pigeons	13	2	15
Non-game birds	36	267	303
Squirrels		2	2
Grouse	3		3
Bear meat		40 pounds	40 pounds
Mountain sheep heads	2		2
Birdnets		9	9
Trout	2,857 pounds	1,075 pounds	3,932 pounds
Black bass	146 pounds	38 pounds	184 pounds
Crappie, sunfish, perch	52	10	62
Salmon	3,002 pounds	5,664 pounds	8,666 pounds
Striped bass	2,123 pounds	1,420 pounds	3,543 pounds
Halibut	1,050 pounds	650 pounds	1,700 pounds
Barracuda	12,906 pounds	11,888 pounds	24,194 pounds
Spotfin croaker		400 pounds	400 pounds
Sturgeon	254 pounds	140 pounds	394 pounds
Catfish	177 pounds	97 pounds	274 pounds
Hardheads	31	7	38
Whitebait	40 pounds		40 pounds
Crabs	4,501	11,362	15,863
Clams	4,112	8,431	12,543
Lobsters	5,011 pounds	1,750 pounds	6,761 pounds
Abalones	711	1,652	2,363
Mussels	260		260
Shrimps	170 pounds		170 pounds
Smelts		19 pounds	19 pounds
Illegally used fishing apparatus, nets, traps	57	72	129

Illegally used fishing apparatus, after condemnation in superior courts, is destroyed or sold by the board in accordance with the law. All wholesome fish and game is donated to public and charitable institutions, from whom many grateful letters of acknowledgment have been received.

CALIFORNIA FISHERY PRODUCTS.

CANNED, CURED AND MANUFACTURED FISHERY PRODUCTS OF CALIFORNIA FOR THE YEAR 1922.

(Compiled by the Department of Commercial Fisheries, Fish and Game Commission of California.)

Canned.

Species of fish	Size of cans	Northern California district, cases	Monterey district, cases	San Pedro district, cases	San Diego district, cases	Total cases
Abalone	1-lb.		2,037	1,014		3,051
Albacore	1-lb.			20,570	4,315	24,885
	½-lb.			134,249	18,089	152,338
	¼-lb.			11,677	4,865	16,542
Bonita	½-lb.			5,208	160	5,368
	¼-lb.			5,223		5,223
Fish cake (Kamaboko)	1-lb.			8,222		8,222
	½-lb.			11,789		11,789
Mackerel	1-lb.			205		205
Salmon	1-lb. flat	4,162				4,162
	½-lb. flat	15,338				15,338
Sardines	1-lb. oval		353,188	340,860	3,595	697,643
	½-lb. oval		1,479	5,760		7,239
	½-lb. square			336	2,559	2,895
	¼-lb. square				20,986	20,986
	1-lb. tall			78		78
Shad	1-lb.	240				240
Shad roe	½-lb.	220				220
Squid	½-lb.				137	137
Striped tuna	1-lb.			2,977	9,011	11,988
	½-lb.			63,012	45,939	108,951
	¼-lb.			8,210	21,211	29,421
Tuna, bluefin	1-lb.			873	2,512	3,385
	½-lb.			7,827	13,727	21,554
	¼-lb.			2,275	7,455	9,730
Tuna, yellowfin	1-lb.				3,711	3,711
	½-lb.			1,002	14,400	15,402
	¼-lb.				5,823	5,823
Tuna, unclassified	4-lb.			635		635
	1-lb.			31,153		31,153
	½-lb.			127,919	5,000	132,919
	¼-lb.			78,419	400	78,819
Yellowtail	1-lb.			315		315
	½-lb.			3,336	23	3,359
Totals		19,960	356,704	873,144	183,918	1,433,726

Salted, Smoked and Dried.

Species of fish	Size or quantity	Northern California district	Monterey Bay district	San Pedro district	San Diego district	Total
Anchovy (salted)	Tierces		8			8
Barracuda (dried)	Pounds				5,000	5,000
Black cod (smoked)	Pounds	98,760				98,760
Bonita (smoked)	Pounds			24,000		24,000
Mackerel (dry salted)	Barrels			98		98
Mixed fish (dried)	Pounds				172,000	172,000
Salachini	10-lb. tubs		3,000			3,000
	50-lb. tubs		200			200
	50-lb. boxes		8,000			8,000
Salmon (mild cured)	Casks	1,571	104			1,675
(hard salted)	Barrels	163				163
(smoked)	Pounds	1,086				1,086
Sardines (dried)	Pounds				600	600
(dry salted)	50-lb. boxes		3,000			3,000
(dry salted)	Barrels			425		425
(dry salted)	Pounds			211,700		211,700
(smoked)	Pounds			12,800		12,800
Shad (mild cured)	Tierces	28				28
Sea bass (dried)	Pounds				11,000	11,000
Yellowtail (dried)	Pounds				55,000	55,000
(salted)	Barrels			50		50
(salted)	Pounds			32,730		32,730
Miscellaneous Data.						
Fish meal	Tons	396	2,299	5,373	959	9,027
Oil	Gallons	14,743	281,115	244,310	6,882	547,050
Estimated value of pack		$497,374	$1,974,591	$5,742,591	$1,318,202	$9,532,758
Number of employees		400	1,253	2,362	812	4,827
Value of packing plants		$1,396,400	$1,553,500	$5,101,846	$1,070,200	$9,121,946

NOTE.—Some Albacore included in Tuna, unclassified. Tierces—800 pounds net. Barrels—200 pounds net.

CANNED, CURED AND MANUFACTURED FISHERY PRODUCTS OF CALIFORNIA FOR THE YEAR 1923.

(Compiled by the Department of Commercial Fisheries, Fish and Game Commission of California).

Canned.

Species of fish	Size of cans	Northern California district, cases	Monterey district, cases	San Pedro district, cases	San Diego district, cases	Total cases
Abalone	1-lb.		2,237	662		2,899
Albacore	1-lb.			18,173	10,919	29,092
	½-lb.			173,206	67,953	241,159
	¼-lb.			18,122	9,142	27,264
Bonita	1-lb.			397		397
	½-lb.			13,763	69	13,832
	¼-lb.			458		458
Fish cake (Kamaboko)	½-lb.			28,283		28,283
Mackerel	1-lb.		271			271
Mackerel, filet	1-lb. oval			3,783		3,783
	½-lb. oval			3		3
Salmon	1-lb. flat	6,629				6,629
	½-lb. flat	12,385				12,385
Sardines	1-lb. oval		580,464	488,885	19,215	1,088,564
	1-lb. tall		520			520
	½-lb. oval		7,603	103	1,311	9,017
	½-lb. square		473		1,621	2,094
	¼-lb. square		1,925	2,085	26,058	30,068
Sardines, kippered	1-lb. oval			1,179		1,179
	½-lb. oval			581		581
Squid	½-lb.		1,759			1,759
Striped tuna	1-lb.			4,197	4,645	8,842
	½-lb.			105,781	50,637	156,418
	¼-lb.			25,824	8,144	33,968
Tonno	½-lb.			571	201	772
	¼-lb.			72	405	477
Tuna, bluefin	1-lb.			1,548	2,697	5,245
	½-lb.			27,698	19,373	47,071
	¼-lb.			2,630	99	2,729
Tuna, yellowfin	5-lb.			1,924		1,924
	1-lb.			7,246	3,903	11,149
	½-lb.			91,070	58,482	149,552
	¼-lb.			8,644	1,977	10,621
Tuna, unclassified	4-lb.			1,061		1,061
	1-lb.			1,948	965	2,913
	½-lb.			20,405	7,525	27,930
	¼-lb.			10,539	1,299	11,838
Tuna flake	1-lb.			1,029		1,029
	½-lb.				237	237
	¼-lb.				300	300
Yellowtail	1-lb.			1,425	937	2,362
	½-lb.			1,489	3,863	5,352
Totals		19,014	595,252	1,064,784	301,977	1,981,027

CANNED, CURED AND MANUFACTURED FISHERY PRODUCTS OF CALIFORNIA FOR THE YEAR 1923—Continued.

Salted, Smoked and Dried.

Species of fish	Size or quantity	Northern California district	Monterey Bay district	San Pedro district	San Diego district	Total
Barracuda (salted)	Pounds				42,264	42,264
Bonita (salted)	Pounds			5,384	1,415	6,799
(smoked)	Pounds			10,000		10,000
Mackerel (salted)	200-lb. barrel			390		390
	Pounds				6,889	6,889
Mullet (salted)	Pounds				1,075	1,075
Rock bass (salted)	Pounds				335	335
Rock cod (salted)	Pounds				1,730	1,730
Sablefish (smoked)	Pounds	9,461				9,461
Salacchini	50-lb. tubs		600	571		1,171
	50-lb. boxes		28,000			28,000
	21-lb. tins—4 to case		450			450
	10-lb. boxes		6,000			6,000
Salmon (mild cured)	Tierces	1,320	91			1,411
(smoked)	Pounds	151,400				151,400
Sardines (mild cured)	Pounds			16,000		16,000
(hard salted)	Barrels			200	24	224
(hard salted)	Pounds			320,451		320,451
Sea bass, black (salted)	Pounds				8,557	8,557
Sea bass, white (salted)	Pounds				2,957	2,957
Sea trout (salted)	Pounds				1,740	1,740
Shad (mild cured)	Tierces	116				116
Squid (dried)	Pounds		99,000			99,000
Yellowtail (salted)	Pounds				173,104	173,104
Mixed fish (dried)	Pounds	69,718				69,718

Miscellaneous Data.

Fish meal	Tons	420	3,386	4,216	1,216	9,238
Fish oil	Gallons	19,093	557,460	346,883	28,452	951,888
Estimated value of pack		$533,768	$2,936,466	$7,898,734	$2,671,873	$14,040,841
Number of employees		366	1,015	2,605	1,076	5,062
Number of plants operated		25	16	20	9	70
Value of packing plants		$988,965	$1,261,193	$2,862,609	$960,750	$6,073,517

CALIFORNIA FRESH FISHERY PRODUCTS FOR YEAR 1922.

Compiled by Fish and Game Commission, Department of Commercial Fisheries.

Species of fish	Del Norte, Humboldt	Mendocino, Sonoma, Lake	Marin	Solano, Yolo	Tehama, Colusa, Glenn	Sacramento, San Joaquin	Alameda, Contra Costa	San Francisco, San Mateo	Santa Cruz	Monterey	San Luis Obispo, Santa Barbara, Ventura	Los Angeles	Orange	San Diego, Imperial	Total	Mexican, brought into California
Albacore										236		11,769,022	18,092	1,444,473	13,231,823	
Anchovies								150,786		130,433		364,797		500	652,516	
Barracuda								81	517	13,031	103,214	3,675,366	9,433	919,806	4,721,448	1,528,770
Bluefish									4,201	45,135					49,336	
Boccaccio			26					66,785	185,833	764,345	1,250				1,018,239	
Bonito									13,500	2,106	11,600	816,025	60	39,852	883,143	45,922
Carp		1,795		5,338		12,422	35,456	11,902							66,913	
Catfish		123,204				2,232	243								125,679	
Chilipepper								30,012	121,993	64,050					216,055	
Cultus Cod	13,608	7,469	86					414,181	46,460	85,526	15	5		1,131	568,481	
Dolphin																
Eels														20	20	
Flounders	16,343		25	2,319			3,909	466,087	46,167	942	804	1,840		244	538,680	540
Grayfish							1,160	92,276						188,582	282,018	
Greenfish																
Hake								57,666	16,850						74,516	
Halibut	48,016	37,148	1,032					69,750	4,142	21,963	402,767	1,548,479	87,876	365,763	2,586,945	816,539
Hardhead						18,206									18,206	
Herring	6,222		12,650				70,345	250,887	1,000		517				341,621	
Kingfish							25	3,434	84,086	228,019	293	252,220	106	13,515	581,698	165
Mackerel									12,346	537,171	25,167	1,680,710	31,933	179,435	2,466,762	29,166
Marlin																
Mullet														24,364	24,364	6,582
Perch	68,479	70	31,974				61	46,252	6,798	20,741	402	57,474	1,103	4,280	237,634	6,142
Pike				74	153	2 481	4 249	487							7,444	
Pompano								1,659	33	448					16,050	372
Rock Bass												13,688		222	311,362	4,689
Rockfish	19,142	3,730						614,040	209,234	433,029	790	174,151	6,551	129,860	3,004,186	24,198
Sablefish								209,807	51,868	3,879	58,649	1,104,150	15,990	546,222	268,554	
Salmon	2,006,822	1,621,765	10,180	503,925	64,793	396,553	799,795	951,137	397,358	482,771	30				7,235,124	
Sandabs								1,020,778	132,794	3,645		13,497	265		1,170,979	
Sardines			125					170,390	1,990	44,676,589	190	46,002,008	1,360	2,487,188	93,999,900	
Sculpin												37,825	20	4,095	41,940	181
Sea Bass—Black											352	43,614	287	39,439	83,692	13,662
Sea Bass—White	68		19,191					29,232	44,016	597	46,899	1,721,864	29,508	291,047	2,182,422	722,302
Sea Trout	65							36				1,084	368	11,957	13,510	13 918
Shad				1,057		2,988	30,729	31,457							66,231	
Shad—Buck				41 338		72,931	213,101	176							327,546	

Shad—Roe				127,102		32,361	556,205									715,668	
Sheepshead											352	1,373		16,458		18,183	22
Skates								107,472	5,375	908	2,505	3,938	1.012			121,210	
Skipjack									11,149			5,189,872		4,914,691		10,115,712	1,746,670
Smelt	28,957	157	17,916				14,783	84,208	95,263	63,329	89,411	266,885	137.942	24,077		822,928	7,212
Sole	166							6,335,442	480,569	62,745	37,495	115,889	3,150	7,664		7,043,111	225
Sphittail						9,194	1,214									10,408	
Striped Bass			1,481	70,914	270	92,212	352,562	166,759								684,198	
Stingaree																	
Suckers						1,348	4									1,352	
Surf Fish																	
Swordfish												21,361		1,895		23,256	
Tomcod								30,799	1,315							32,114	
Trout—Farm																	
Trout-Steelhead	2,490															2,490	
Tuna											2,065	668,019		1,806		671,890	20,462
Tuna—Bluefin												1,811,219		1,000,064		2,811,283	26,910
Tuna—Yellowfin												780,843		424,180		1,205,023	6,132,382
Turbot			784					750								1,534	
Whitebait	20,874		132					63,001								84,007	
Whitefish											390	24,944		2,445		27,779	2,491
Yellowtail											20,388	1,409,337	1,261	1,680,145		3,111,131	303,292
Miscellaneous	2,768		9	373			1,087	94,613	23,884	8,475	46,939	70,086	1,723	1,248		251,285	3,000
Total fish	2,234,020	1,795 333	95,611	752,440	65,216	642,928	2,084,928	11,572,431	2,001,741	47,656,113	852,484	79,701,636	348,050	14,766,668		164,569,599	11,455,814
Crustaceans:																	
Crabs (doz.)	5,959	582	1,250				82	27,871	101	2						35,847	
Ecrevisse																	
Shrimps			126,950				44,124	819,275								990,349	
Spiny Lobsters											64,298	158,697	17,504	135,811		376,310	640,466
Mollusks:																	
Abalones										1,504,943	18,451					1,523,394	37,040
Clams—Cockle	6,135	698	24,569									162				31,564	
Clams—Mixed	15,749	152	15,615				2,350	190			100	1,135				35,291	
Clams—Pismo									1,385		191,881					193,266	225
Clams—Softshell	516	3,519	80,890				196,962	61,375								343,262	
Cuttlefish	83		50					10,839	14,796	66,802	37	5,981				98,588	
Limpets																	
Mussels							2,724	9,256	185	6,055	155		25,497			43,872	
Oysters—Eastern			3,378,418													3,378,418	
Oysters—Native																	
Snails																	
Squid										124,103		22,772		62,766		209,641	
Miscellaneous:																	
Frogs							[1]100									100	
Terrapins					[2]75											75	
Turtles																	12,521
Totals	2,262,462	1,800,284	3,723,253		275		2,231,270	2,501,249	2,108,208	49,358,018	1,127,406	79,890,383	391,051	14,965,245		171,839,576	2,146,066

All amounts shown in pounds unless otherwise specified. Albacore and skipjack cleaned.
[1]20 dozen frogs. [2]5 dozen terrapin.

CALIFORNIA FRESH FISHERY PRODUCTS FOR YEAR 1923.

Compiled by Fish and Game Commission, Department of Commercial Fisheries.

Species of fish	Del Norte, Humboldt	Mendocino, Sonoma, Lake	Marin	Solano, Yolo	Tehama, Colusa, Glenn	Sacramento, San Joaquin	Alameda, Contra Costa	San Francisco, San Mateo	Santa Cruz	Monterey	San Luis Obispo, Santa Barbara, Ventura	Los Angeles	Orange	San Diego, Imperial	Total	Mexican, brought into California
Albacore										149		8,514,349	754	3,972,947	12,488,199	26,634
Anchovies								184,085		85,016		37,973			307,074	
Barracuda								56		6,982	21,693	4,363,859	28,738	714,496	5,135,824	2,064,751
Bluefish									116,919	29,459					146,378	
Boccaccio	13							45,990	257,704	689,820	10,825				1,004,352	
Bonito								574		3,325	2,288	441,713	28	30,843	478,771	636,476
Carp		12,185		3,257		65,341	58,163	9,661							148,607	
Catfish		50,884		823		51,330	26,249								129,286	
Chilipepper								36,934	81,573	31,843					150,350	
Cultus Cod	13,112	6,562	332					321,542	28,693	93,677				3,382	467,300	47
Dolphin																
Eels														188	188	
Flounders	14,968		124	3,210			12,117	418,894	51,382	6,305		1,522		264	508,786	175
Grayfish								152,208	1,345			5,645		201,165	360,363	
Greenfish																
Hake								70,232	8,737						78,969	
Halibut	171,156	8,351	759					19,100	3,427	4,333	333,265	794,550	52,719	157,039	1,544,699	882,138
Hardhead						9,563									9,563	
Herring	3,341		28,035				66,087	269,785	188					16,514	383,950	
Kingfish								735	50,848	110,207	26	230,900		10,719	403,435	8,129
Mackerel								74	944	570,371	13,012	2,654,317	96,408	218,828	3,553,954	38,495
Marlin																
Mullet												503		9,504	10,007	64,218
Perch	43,317		23,148	108			97	63,287	1,884	22,502	980	135,270	959	34,497	326,049	33,633
Pike				111		647	3,772	94							4,624	
Pompano								618	187	106		15,541	10	3,318	19,780	13,138
Rock Bass											2,041	203,157	6,921	115,920	328,039	29,230
Rockfish	5,851	1,609	3,037					483,395	220,284	746,812	57,583	1,342,561	52,824	863,692	3,777,648	17,894
Sablefish								198,590	329,238	10,464					538,292	
Salmon	1,990,235	812,867	31,129	475,812	68,964	477,526	1,221,643	1,283,748	306,336	422,000					7,090,260	
Sandabs								1,220,604	130,215	2,082	133	10,632	245		1,363,911	
Sardines								339,804	275	85,022,672	1,060	67,493,419	775	5,301,351	158,159,356	
Sculpin												44,623	59	15,784	60,466	
Sea Bass—Black											2,703	35,405	839	36,793	75,740	151,255
Sea Bass—White			6,020					16,555	2,449	690	149,870	1,370,096	14,428	218,555	1,778,663	560,962
Sea Trout										38				3,307	3,345	30,915
Shad				1,565		4,912	37,099	28,470	49						72,095	
Shad—Buck				47,266		23,163	333,331	27							403,787	
Shad—Roe				110,248		38,148	661,100	5							809,501	

Sheepshead											289	5,979	76	24,767	31,111	517
Skates								127,224	2,507	990		3,019	188	60	133,988	
Skipjack												3,175,769		1,403,308	4,579,077	6,883,445
Smelt	32,166	2,765	42,104				82	109,934	62,210	7,140	69,200	334,796	120,795	17,648	798,840	7,540
Sole	10,153		182				270	6,174,114	642,785	54,275	73,842	113,931	3,388	12,145	7,085,085	950
Splittail						13,156	800								13,956	
Striped Bass			2,593	78,030	119	141,342	581,870	105,508		111					909,573	
Stingaree												365			365	
Suckers						342									342	
Surf Fish																
Swordfish												6,277		4,779	11,056	635
Tomcod			424					37,868	3,475						41,767	
Trout—Farm																
Trout—Steelhead	3,011														3,011	
Tuna												427,151	15		427,166	235,204
Tuna—Bluefin												1,818,337		1,399,753	3,218,090	
Tuna—Yellowfin												322,987		105,909	428,896	10,408,029
Turbot	20		766					225							1,011	
Whitebait	25,290		1,051					40,607		870					67,818	
Whitefish												26,099	595	7,809	34,503	5,405
Yellowtail											3,001	1,356,643	2,748	1,606,204	2,968,596	1,094,012
Miscellaneous	1,469	4,700		1,482		204	1,332	43,304	14,019	5,462	13,470	79,707	440	4,456	170,045	13,784
Total fish	2,314,102	899,923	139,704	721,912	69,083	825,674	3,004,012	11,803,851	2,317,673	87,927,701	755,281	95,367,095	383,952	16,515,944	223,045,907	23,207,611
Crustaceans:																
Crabs	[1]254,640	[2]6,480	[3]16,776				[6]3,552	[7]786,936	[9]4,848	[10]2,568					[11]1,075,800	
Ecrevisse																
Shrimps			418,773					694,585							1,113,358	
Spiny Lobsters											75,583	158,168	25,206	125,424	384,381	708,477
Mollusks:																
Abalones			40						15	1,532,757	22,322				1,555,134	32,599
Clams—Cockle	5,538	20	23,145									7,414			36,117	
Clams—Mixed	14,551		10,497												25,048	797
Clams—Pismo									720		237,228				237,948	
Clams—Softshell		530	78,560				145,231	58,774							283,095	
Cuttlefish			219					9,877	42,134	57,823		169			110,222	
Limpets							477	9,409	50	4,665	95		45,100		60,026	
Mussels			230					[8]236,736							[12]688,103	
Oysters—Eastern			[4]451,367													
Oysters—Native																
Snails										1,098,510		76,630		925	1,176,065	4,381
Squid																
Miscellaneous:																
Frogs (doz.)															[13]1,128	
Terrapins						[5]1,128									960	3,097
Turtles									960							
Totals	2,588,831	906,953	1,139,311	721,912	69,083	826,802	3,153,272	13,600,168	2,366,400	90,624,024	1,090,509	95,609,476	454,258	16,642,293	229,793,292	23,956,962

All amounts shown in pounds unless otherwise specified.

[1]10,610 dozen.
[2]270 dozen.
[3]699 dozen.
[4]2,051,668 shell oysters.
[5]47 dozen.
[6]148 dozen.
[7]32,789 dozen.
[8]1,076,075 shell oysters.
[9]202 dozen.
[10]407 dozen.
[11]44,825 dozen.
[12]3,127,743 shell oysters.
[13]47 dozen.

NATIVITY OF COMMERCIAL FISHERMEN LICENSED APRIL 1, 1922, TO MARCH 31, 1923.

Native of	Del Norte, Humboldt	Mendocino, Sonoma, Lake	Marin	Solano, Yolo	Tehama, Colusa, Glenn	Sacramento, San Joaquin	Contra Costa, Alameda	San Francisco, San Mateo	Santa Cruz	Monterey	San Luis Obispo, Santa Barbara, Ventura	Los Angeles	Orange	San Diego, Imperial	Miscellaneous	Total
Austria				1		3	6	1		9	1	296		9		326
Canada	1	1		1	1	1					3	2		3		13
China			1			1	6	21		3						32
Dalmatia						1	3			1		81		14		100
Denmark	1	6	8	1	1	3	4	2		1	1	13		7		48
England	1		1					2	1	1	2	5		3		16
France		3	1			1				3		4				12
Finland	16	30						1		4	1	1				53
Germany	2	6	2	1		10	1	3	4	5	3	6		4		47
Greece			4	46		12	7	2		2	1	3		3		80
Holland												1				1
Hungary												1	1			2
Ireland				1												1
Italy	11	1	2	42		3	192	262	29	154	8	162		168		1,034
Japan						9				85	4	731		149		978
Mexico														9		9
Norway	5	6		2		3	2		1	4	6	38		4		71
Poland						1	1									2
Portugal	3	8	1	25		13	4	2	1	13	10	44		44		168
Russia		1	2			1		2	1	2	1	42		2		54
Scotland											1	6		2	1	10
Slav										2		24		3		29
Spain		2					1	2		21	1	1		3		31
Sweden		5	2	4		3	2	3	1	1	2	22		15		60
Switzerland	1								1				1	1		4
Turkey												1				1
United States	108	138	33	56	100	62	57	49	24	33	85	191	9	131	9	1,145
Miscellaneous and unaccounted for							2			1	3	3		3	133	145
Totals	209	207	57	180	102	127	288	352	63	345	133	1678	11	577	143	4472

NATIVITY OF COMMERCIAL FISHERMEN LICENSED APRIL 1, 1923, TO MARCH 31, 1924.

Native of	Del Norte, Humboldt	Mendocino, Sonoma, Lake	Marin	Solano, Yolo	Tehama, Colusa, Glenn	Sacramento, San Joaquin	Contra Costa, Alameda	San Francisco, San Mateo	Santa Cruz	Monterey	San Luis Obispo, Santa Barbara, Ventura	Los Angeles	Orange	San Diego, Imperial	Miscellaneous	Total
Austria			1	1	1	4	1			9		212	1	3		233
Canada	2					1	6				1	4	1	2		17
China							3	24		1					1	29
Dalmatia						1	1	2				91		14		109
Denmark	2	3	5			2					1	17	2	7		39
England					1		1	5	2		1	6		4	1	21
France		1	1							2		3				7
Finland	9	26						3			1	6		1		46
Germany	3	1	2	2		8	3	3	3		2	7	1	6		41
Greece	1		3	37		10	8	2				4		4		69
Holland							1							1		2
Hungary													2			2
Ireland	1			1		1					1			1		5
Italy	9	3	2	33		3	187	232	24	229	8	129	1	155		1,015
Japan				1		20				65	3	728		124		941
Mexico														3		3
Norway	2	4		1		2		1	2			39		2		53
Poland						1					1	3				5
Portugal		4	1	23	2	4	9	2		7	7	44		51		154
Russia						1		3		1		30	1			36
Scotland	1								1		2					4
Slav												20		3		23
Spain		5						3		43		3		5		59
Sweden	1	5	2	4		4	2	5	6	3	3	13	2	15		65
Switzerland									1	1		1	1			4
United States	191	68	19	46	42	58	57	38	18	72	94	148	27	141	13	1,032
Wales	1										2					3
Miscellaneous and unaccounted for										2	1	12		3	88	106
Totals	223	120	36	149	46	120	279	323	57	435	128	1,520	39	545	103	4,123

LION BOUNTIES.

Statement of Lion Bounties Paid by the Fish and Game Commission from January 1, 1922, to December 31, 1923.

	1922	1923	Total since 1907
Alameda	--	1	2
Alpine	--	--	1
Amador	2	--	11
Butte	1	--	34
Calaveras	--	1	17
Colusa	2	1	21
Del Norte	4	2	107
El Dorado	7	3	78
Fresno	2	3	35
Glenn	10	1	60
Humboldt	14	10	623
Imperial	--	--	2
Inyo	--	4	12
Kern	17	22	193
Kings	--	--	1
Lake	21	21	169
Lassen	--	--	9
Los Angeles	5	3	76
Madera	--	1	41
Mariposa	7	5	99
Mendocino	22	9	278
Merced	--	--	3
Modoc	--	--	4
Mono	1	--	11
Monterey	16	17	157
Napa	--	--	3
Nevada	--	--	7
Orange	--	--	9
Placer	--	5	64
Plumas	1	--	10
Riverside	--	2	45
Sacramento	--	--	1
San Benito	2	3	42
San Bernardino	4	3	38
San Diego	--	1	48
San Joaquin	--	--	2
San Luis Obispo	13	10	120
San Mateo	--	--	1
Santa Barbara	26	13	158
Santa Clara	1	11	37
Santa Cruz	--	2	4
Shasta	37	16	330
Sierra	--	--	6
Siskiyou	14	5	271
Sonoma	1	--	25
Stanislaus	--	--	10
Sutter	--	--	2
Tehama	14	4	212
Trinity	19	11	324
Tulare	22	15	172
Tuolumne	13	11	118
Ventura	1	8	61
Yuba	--	1	5
Totals	299	225	4,169

FINANCIAL STATEMENT.

Comparative Statement of Income for the Fiscal Years 1922-23 and 1923-24.

	1922-23	1923-24
License sales—		
Hunting	$249,511 00	$251,182 00
Angling	217,038 00	191,252 00
Market fishermen	46,510 00	43,730 00
Wholesale fish packers	1,170 00	1,245 00
Fish breeders	40 00	75 00
Fish importers	5 00	----------
Trapping	3,119 00	2,596 00
Game breeders	152 50	232 50
Kelp	10 00	----------
Total license sales	$517,555 50	$490,312 50
Other income—		
Court fines	$30,803 00	$52,748 85
Fish packer's tax	38,033 44	50,921 01
Fish tag sales	3,111 09	4,804 99
Game tag sales	7 01	60 81
Crawfish inspection	210 00	10 00
Abalone inspection	----------	235 00
Interest on bank deposits	----------	463 75
Sales of nets	140 00	27 00
Sale of launch	60 00	----------
Sale of typewriter	22 50	----------
Sale of catfish	----------	100 00
Sale of automobiles	----------	375 00
Sale of deer hides	----------	41 00
Sale of two cabins	----------	70 00
Total other income	$72,387 04	$109,857 41
Total income	$589,942 54	$600,169 91

STATEMENT OF EXPENDITURES FOR THE PERIOD JULY 1, 1922, TO JUNE 30, 1923, OF THE SEVENTY-FOURTH FISCAL YEAR.

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Administration—					
Commissioners	----------	----------	$546 35	----------	$546 35
Executive offices	$346 32	$16,173 20	5,737 46	903 78	23,160 76
Printing	----------	----------	4,149 13	----------	4,149 13
Research and publicity	226 71	4,339 27	695 28	370 00	5,631 26
Accident and death claims	----------	----------	2,702 43	----------	2,702 43
Department totals	$573 03	$20,512 47	$13,830 65	$1,273 78	$36,189 93
Commercial Fish Culture and Conservation—					
Superintendence	$137 24	$10,381 58	$5,398 05	$219 37	$16,136 24
Inspection and patrol	4,694 25	21,798 19	6,756 84	194 74	33,444 02
Research	200 65	17,204 28	2,166 35	314 13	19,885 41
Statistics	676 02	4,698 87	158 51	5 25	5,538 65
Market fishing license commissions	----------	----------	482 00	----------	482 00
Propagation and distribution of salmon	6,674 27	14,033 92	988 80	594 50	22,291 49
Department totals	$12,382 43	$68,116 84	$15,950 55	$1,327 99	$97,777 81
Sporting Fish Culture and Conservation—					
Superintendence	$362 62	$10,286 31	$29,828 78	$6 25	$40,483 96
General patrol (40 per cent.)	1,067 36	48,185 27	31,126 46	268 93	80,648 02
Propagation and distribution of trout	26,730 12	61,740 16	23,498 76	5,938 80	117,907 84
Department totals	$28,160 10	$120,211 74	$84,454 00	$6,213 98	$239,039 82
Game Conservation—					
Superintendence	----------	$1,528 06	$36,564 91	----------	$38,092 97
General patrol (60 per cent.)	$1,601 04	72,277 90	48,689 69	$403 39	120,972 02
Department totals	$1,601 04	$73,805 96	$83,254 60	$403 39	$159,064 99
Tahoe camping ground	$120 82	$659 25	$19 08	----------	$799 15
Grand totals	$42,837 42	$283,306 26	$197,508 88	$9,219 14	$532,871 70

STATEMENT OF EXPENDITURES FOR THE PERIOD JULY 1, 1923, TO JUNE 30, 1924, OF THE SEVENTY-FIFTH FISCAL YEAR.

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Administration—					
Commissioners			$429 59		$429 59
Executive offices	$346 95	$15,489 97	5,763 43	$36 80	21,637 15
Printing	7,253 52				7,253 52
Research and publicity	67 17	4,375 00	807 25	97 20	5,346 62
Accident and death claims			569 04		569 04
Department totals	$7,667 64	$19,864 97	$7,569 31	$134 00	$35,235 92
Commercial Fish Culture and Conservation—					
Superintendence	$236 99	$7,495 00	$2,729 13		$10,461 12
Inspection and patrol	2,221 31	20,943 23	4,977 90	$13 37	28,155 81
Research	608 22	12,290 81	2,102 20	100 49	15,101 72
Statistics	616 35	5,078 38	80 83		5,775 56
Propagation and distribution of salmon	6,478 11	11,424 96	1,145 02	41 98	19,090 07
Department totals	$10,160 98	$57,232 38	$11,035 08	$155 84	$78,584 28
Sporting Fish Culture and Conservation—					
Superintendence	$63 26	$9,957 25	$2,415 36	$0 75	$12,436 62
Printing	61 20				61 20
Propagation and distribution of trout	23,559 07	52,425 58	8,948 28	122 16	85,055 09
Department totals	$23,683 53	$62,382 83	$11,363 64	$122 91	$97,552 91
Patrol and Law Enforcement—					
Prosecutions and allowances			$188 35		$188 35
General patrol	$1,376 11	$117,499 16	78,261 14	$4 16	197,140 57
Department totals	$1,376 11	$117,499 16	$78,449 49	$4 16	$197,328 92
Fish and Game Conservation—					
Mountain lion hunting		$1,500 00	$767 82		$2,267 82
Mountain lion bounties			6,140 00		6,140 00
State Fair exhibit	$175 77	241 92	688 56		1,106 25
Department totals	$175 77	$1,741 92	$7,596 38		$9,514 07
License commissions			$45,906 90		$45,906 90
Tahoe camping ground	$62 95	$813 00	7 25		883 20
Grand totals	$43,126 98	$259,534 26	$161,928 05	$416 91	$465,006 20

Comparative Balance Sheets at Beginning and End of Each of the Seventy-fourth and Seventy-fifth Fiscal Years.

	July 1, 1922	June 30, 1923	June 30, 1924
Debits.			
Available appropriated fund			$11,630 49
Warrants receivable	$28,936 62	$47,587 34	67,327 79
Cash, state	137 00	3,602 00	17,911 75
Fish and Game Preservation Fund	35,000 85	87,536 87	209,345 47
Accounts receivable		1,069 82	115 18
Bond deposits (licenses sold to agents)	41,591 00	52,206 00	71,670 00
Unissued licenses available	401,030 00	435,841 50	532,422 00
County clerks unissued license supplies	285,770 00	271,010 00	292,967 00
Fish tags			3,261 41
Game tags			320 13
Revolving fund	500 00	500 00	
Total debits	$792,965 47	$899,353 53	$1,206,971 22
Credits.			
Appropriation for support			$1,012 92
Deficiency appropriation for salaries			102 00
Deficiency appropriation for support			10,515 57
Claims filed	$28,936 62	$47,587 34	67,327 79
Accumulated excess income	35,137 85	92,208 69	227,372 40
Liability for bond deposit	41,591 00	52,206 00	71,670 00
Accountability for licenses	686,800 00	706,851 50	825,389 00
Accountability for fish tags			3,261 41
Accountability for game tags			320 13
Revolving Fund liability to Board of Control	500 00	500 00	
Total credits	$792,965 47	$899,353 53	$1,206,971 22

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STATE OF CALIFORNIA

THIRTY-FIRST BIENNIAL REPORT

OF THE

Superintendent of Public Instruction

FOR THE

SCHOOL YEARS ENDING JUNE 30, 1923, AND JUNE 30, 1924

Transmitted to the Governor,
September 15, 1924

CALIFORNIA STATE PRINTING OFFICE
FRANK J. SMITH, Superintendent
SACRAMENTO, 1924

34862

REPORT.

DEPARTMENT OF EDUCATION,
SACRAMENTO, September 15, 1924.

HONORABLE FRIEND WM. RICHARDSON,
Governor of California.

SIR: I have the honor to submit herewith the report of the Superintendent of Public Instruction for the biennium ending June 30, 1924, as required by section 1532 of the Political Code of California.

Respectfully yours,

Will C. Wood

Superintendent of Public Instruction and
ex officio Director of Education.

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EDUCATIONAL DIRECTORY.

Superintendent of Public Instruction.

(Elected November 7, 1922.)

Will C. Wood	January, 1927	Alameda

Staff of the Superintendent of Public Instruction.

Name	Term expires	Address
Sam H. Cohn, Deputy		Sacramento
A. R. Heron, Assistant Superintendent		Sacramento
Ethel Richardson, Assistant Superintendent		Los Angeles
Georgiana Carden, Supervisor of Attendance		Sacramento
Edna M. Stangland, Secretary		Sacramento
W. S. Dyas, Head of Textbook Department and Bookkeeper		Sacramento

STATE BOARD OF EDUCATION.

(Appointed by the Governor.)

Name	Term expires	Address
E. P. Clarke	1926	Riverside
Mrs. Carrie Parsons Bryant	1925	Los Angeles
*Mrs. Elizabeth B. Phillips	1924	Porterville
Clarence E. Jarvis	1925	Sacramento
S. D. Merk	1927	Burlingame
Florence J. O'Brien	1927	Chico
*C. A. Storke	1924	Santa Barbara

NOTE.—Will C. Wood, Superintendent of Public Instruction, is Secretary of the Board, according to law.

Commissioners of Education.

(Assistant Superintendents of Public Instruction appointed by State Board of Education.)

Mrs. Grace C. Stanley, Commissioner of Elementary Schools	Sacramento
Albert C. Olney, Commissioner of Secondary Schools	Sacramento
Nicholas Ricciardi, Commissioner of Vocational Education	Sacramento

State Supervisors.

Herbert R. Stolz, Physical Education	Sacramento
Richard J. Werner, Agricultural Instruction	Sacramento
Maude I. Murchie, Teacher Training in Home Economics	Sacramento
J. C. Beswick, Trade and Industrial Instruction	Sacramento

Assistant Supervisor.

Miss Winifred Van Hagen, Physical Education	Oakland

Assistant Secretaries.

Florence B. Argall	Sacramento
Marion H. Ketcham, Retirement Salary Department	Sacramento
Wm. M. Coman, Commission of Credentials	Sacramento

*When this book went to press, Mrs. Phillips had been succeeded by Mrs. Helene Hastings of Oakland and Mr. C. A. Storke had been reappointed.

COUNTY SUPERINTENDENTS OF SCHOOLS.

County.	Name.	Address.
Alameda	D. E. Martin	Oakland.
Alpine	Mrs. Eugenia B. Bruns	Gardnerville, Nevada
Amador	Mrs. S. R. Greenhalgh	Jackson.
Butte	C. H. Nielsen	Oroville.
Calaveras	Charles Schwoerer	San Andreas.
Colusa	Halbert H. Sauber	Colusa.
Contra Costa	Wm. H. Hanlon	Martinez.
Del Norte	E. A. Moore	Crescent City.
El Dorado	E. J. Fitzgerald	Placerville.
Fresno	Clarence W. Edwards	Fresno.
Glenn	S. M. Chaney	Willows.
Humboldt	Robert A. Bugbee	Eureka.
Imperial	H. C. Coe	El Centro.
Inyo	A. A. Brierly	Bishop.
Kern	L. E Chenoweth	Bakersfield
Kings	Miss M. L. Richmond	Hanford.
Lake	Minerva Ferguson	Lakeport.
Lassen	Mrs. Julia A. Norwood	Susanville.
Los Angeles	Mark Keppel	Los Angeles.
Madera	Mrs. Meta N. Footman	Madera.
Marin	Jas. B. Davidson	San Rafael.
Mariposa	T. B. Price	Mariposa.
Mendocino	Roy Good	Ukiah.
Merced	C. S. Weaver	Merced.
Modoc	Charles J. Toreson	Alturas.
Mono	Mildred Gregory	Bridgeport.
Monterey	J. G. Force	Salinas.
Napa	Eva Holmes	Napa.
Nevada	Mrs. Ella M. Austin	Nevada City.
Orange	R. P. Mitchell	Santa Ana.
Placer	Irene Burns	Auburn.
Plumas	Mrs. V. L. Long	Quincy.
Riverside	Ira C. Landis	Riverside.
Sacramento	R. E. Golway	Sacramento.
San Benito	Catherine U. Gray	Hollister.
San Bernardino	Ida M. Collins	San Bernardino.
San Diego	Ada York	San Diego.
San Francisco	J. M. Gwinn	San Francisco.
San Joaquin	Harry Bessac	Stockton.
San Luis Obispo	Robert L. Bird	San Luis Obispo.
San Mateo	Roy W. Cloud	Redwood City.
Santa Barbara	A. S. Pope	Santa Barbara.
Santa Clara	J. E. Hancock	San Jose.
Santa Cruz	Miss Cecil M. Davis	Santa Cruz.
Shasta	Mrs. C. Cunningham	Redding.
Sierra	Belle Alexander	Downieville.
Siskiyou	L. S. Newton	Yreka.
Solano	Dan H. White	Fairfield.
Sonoma	Louise Clark	Santa Rosa.
Stanislaus	A. G. Elmore	Modesto.
Sutter	Mrs. Minnie M. Gray	Yuba City.
Tehama	Mamie B. Lang	Red Bluff.
Trinity	Lucy Young	Weaverville.
Tulare	J. E. Buckman	Visalia.
Tuolumne	G. P. Morgan	Sonora.
Ventura	Mrs. Blanche T. Reynolds	Ventura.
Yolo	Harriet S. Lee	Woodland.
Yuba	Jennie Malaley	Marysville.

CITY SUPERINTENDENTS OF SCHOOLS.

City.	County.	Name of Supt.
Alameda	Alameda	C. J. Du Four.
Alhambra	Los Angeles	Charles E. Barber.
Bakersfield	Kern	Charles E. Teach.
Berkeley	Alameda	H. B. Wilson.
Chico	Butte	Chas. H. Camper.
Eureka	Humboldt	Geo. B. Albee.
Fresno	Fresno	Wm. John Cooper
Grass Valley	Nevada	J. S. Hennessey.
Long Beach	Los Angeles	W. L. Stephens.
Los Angeles	Los Angeles	Mrs. Susan Dorsey
Modesto	Stanislaus	W. E. Faught.
Oakland	Alameda	Fred M. Hunter.
Oroville	Butte	L. M. Trempe.
Palo Alto	Santa Clara	A. C. Barker.
Pasadena	Los Angeles	J. F. West.
Petaluma	Sonoma	Bruce H. Painter.
Pomona	Los Angeles	G. V. Whaley.
Richmond	Contra Costa	W. T. Helms.
Riverside	Riverside	A. N. Wheelock.
Sacramento	Sacramento	Chas. C. Hughes.
Salinas	Monterey	Arthur Walter.
San Bernardino	San Bernardino	C. R. Holbrook.
San Diego	San Diego	Henry C. Johnson.
San Jose	Santa Clara	Walter L. Bachrodt
San Luis Obispo	San Luis Obispo	Arthur H. Mabley.
San Rafael	Marin	Oliver R. Hartzell.
Santa Ana	Orange	John A. Cranston.
Santa Barbara	Santa Barbara	Paul E. Stewart.
Santa Cruz	Santa Cruz	Karl F. Adams.
Santa Monica	Los Angeles	F. F. Martin
Santa Rosa	Sonoma	Jerome O. Cross.
Stockton	San Joaquin	Ansel S. Williams
Tulare	Tulare	S. J. Brainerd
Vallejo	Solano	E. L. Cave.
Ventura	Ventura	Arthur L. Vincent.
Visalia	Tulare	DeWitt Montgomery

REPORT.

THE GROWTH OF THE STATE SCHOOL SYSTEM.

Statistical tables submitted herewith give ample testimony of the growth of the public school system of California during the biennial period covered by this report.

There are several factors responsible for this growth which is without parallel in the history of California. First of all, there has been an unprecedented increase in the population of the state, particularly in southern California and in the San Francisco Bay region. Second, the high schools of California have expanded to include training in the vocations, Americanization, part-time education and home economics, thus attracting types of people hitherto not interested in high school education. Third, the compulsory education law has been revised in the interest of better enforcement and state, county and school districts have cooperated as never before in the enforcement of the educational rights of children. Fourth, there has been, during the last ten years, an improvement in the economic status of the average family which makes it possible for parents to keep their children in school for a longer period. Fifth, the spirit of America was quickened by the World War to a recognition that an American family which neglects to prepare its children to be the best and most efficient citizens they are capable of becoming, is a "slacker" family.

The following tables show the growth of the public school system in enrollment and average daily attendance during the last ten years:

Table Showing Growth in Total Enrollment in Public School System 1914–1924.

Year	Enrollment
1914	513,319
1915	523,573
1916	557,350
1917	582,926
1918	617,402
1919	644,295
1920	712,818
1921	796,642
1922	862,461
1923	943,438
1924	1,055,848

It will be observed that the increase in enrollment in all branches of the school system for 1914 to 1924 was 105.7 per cent.

Comparative Table of Average Daily Attendance.

	1914	1924	Per cent increase
Kindergarten	6,937	26,763	286
Elementary school	319,244	537,638	68
Secondary school	48,312	140,619	188
Totals	374,493	705,020	88

GROWTH OF SCHOOL EXPENDITURES.

Increase in Bonded Indebtedness.

The growth of school expenditures during recent years has been a matter for general comment. In any discussion of this matter it should be borne in mind that the growth in school expenditures is not peculiar to California. Throughout the nation, the expenditures for education have increased greatly since 1914. The percentage of increase in school expenditures in California during the last decade is greater than that of any other state in the Union. However, the increase is due almost entirely to the growth in population in California—greater proportionately than that of any other state—and to the fluctuation in the value of the dollar. With the population of California increasing annually at a rate varying from seven to eleven per cent, the various school districts have found it necessary to vote bonds and incur heavy building expenses in order to accommodate the children of newcomers. Heavy increases in bonded indebtedness are reflected in tax rates and expenditures for schools. If accommodations had not been provided for the children, the stream of newcomers would have stopped 'ong ago. A heavy increase in bonded indebtedness for schools is a part of the price California has to pay for growth. It is significant that although all bonds for school purposes require a two-thirds vote and although the people of the community incurring the indebtedness are the sole judges of the necessity for bonding, few bond issues for school purposes have failed in recent years and most issues have carried by majorities ranging as high as twenty to one.

The following table shows the increase in bonded indebtedness for school purposes during the last ten years:

Comparative Table of Bonded Indebtedness for Schools.

	1914	1924	Per cent increase
Elementary school districts	$21,148,897 00	$84,394,852 00	299
High school districts	8,937,750 00	58,397,223 00	553
Totals	$30,086,647 00	$142,792,075 00	375

The increase in bonded indebtedness for elementary and high schools during the last decade was 375 per cent. A large proportion of this increase in bonded indebtedness is due to the increase in enrollment amounting to 105.7 per cent during the same period. However, a considerable part of the increase is due to community pride and rivalry. In many school districts, elaborate and ornate school buildings have been erected for the purpose of "boosting" values in the vicinity and satisfying community vanity. The burden of paying for such satisfaction will be distributed over a period of many years whereas the satisfaction gained is only temporary. It is significant that in many communities that boast of expensive and ornate school buildings, the salaries paid to teachers are so low that good teachers can not be obtained. Such communities have sacrificed the substance of education for its shadow.

I wish to point out that the laws relative to bonding in California are faulty in that they permit districts to bond for an improvement that will not last the life of the bond issue. It is not uncommon for school districts to bond for forty years to erect a frame school building

that will be outworn in twenty-five or thirty years. The laws should be amended so as to provide that while bonds for fireproof buildings may be voted for a forty-year period, bonds for nonfireproof buildings can not be voted for more than a thirty-year period. This generation has no moral right to impose a debt on people living forty years hence for facilities which such people will never have opportunity to use.

Increase in Maintenance Charges.

The following table shows the increase in maintenance charges, including all school expenses except capital outlays:

Comparative Table Showing School Expenditures for Maintenance.

	1914	1924	Per cent increase
Kindergartens	$309,627 00	$2,113,325 00	583
Elementary schools	15,073,325 00	43,676,755 00	190
Secondary schools	5,864,462 00	29,785,951 00	408
Totals	$21,247,414 00	$75,576,031 00	256

The total expenditures for maintenance of schools of elementary, secondary and kindergarten grade have, during the ten-year period, increased 256 per cent, whereas the increase in daily attendance (see page —) has increased only 88 per cent. An analysis for the reasons for this discrepancy in percentages of growth in attendance and expenditure shows that while there has been a large increase in the number of "dollars" expended for each pupil, reckoned on the basis of average daily attendance, the state is putting little more purchasing power per pupil into the schools than in 1914.

The following table shows the actual cost per pupil in 1914 and 1924 and makes a comparison between the cost in 1914 and the cost in 1924 reckoned in 1914 values. In translating 1924 values into 1914 values we have used the government estimate of the purchasing power of the 1924 dollar which is 64 cents, reckoned in terms of the 1914 dollar.

Comparative Table Showing Cost Per Pupil Reckoned on Basis of Average Daily Attendance.

	Cost per pupil in 1924, reckoned in dollars of 1924 value	Cost per pupil in 1924, reckoned in dollars of 1914 value	Cost per pupil in 1914, reckoned in dollars of 1914 value
Kindergarten	$78 96	$50 54	$44 68
Elementary schools	81 24	51 99	47 21
Secondary schools	211 82	135 57	121 39

It will be noted that the increase in cost per pupil reckoned in terms of the 1914 dollar, which is the only fair basis for comparison, was for the ten-year period ending June 30, 1924, as follows:

Kindergarten	$5.86 or 13 per cent
Elementary schools	4.78 or 10 per cent
Secondary schools	14.18 or 11 per cent

These percentages represent the true increases in school expenses during the last ten years and are chargeable for the most part to the expansion of the schools along more practical lines and to the increase in the average number of days school was maintained from 172 in 1914 to 181 in 1924.

ECONOMY IN EDUCATION.

In practically every country of the world, the people are struggling under the burden of taxation due to the World War. In our own country the national debt was multiplied twenty-four times to finance American participation in the struggle. The interest on this debt each year amounts to almost as much as the total national budget before the war. The expenses incurred in taking care of the soldiers whose bodies were impaired by war, and the widows and orphans of the men who made the supreme sacrifice for their country, add greatly to the necessary taxes. There is therefore a demand, and a proper demand, that every unnecessary public expense be eliminated and that expansions in governmental works be curtailed so far as possible. In the light of the demand for reduced taxes, every agency of government is called upon to justify its expenditures. If any expenditure can not justify itself, it should be eliminated. Educational institutions and agencies may not escape such a test. However, education is fundamental in American democracy and any proposed impairment of the school system must be subjected to careful analysis. The people of this country can not afford to pay the debts of the World War or any great part thereof by sacrificing the educational opportunities of the young people of America. The greatest extravagance in which the people of this country can indulge is that involved in neglecting the education and proper development of their young people. The best and wisest economy that may be practiced by the American people is not in saving dollars, but in saving and developing talent, in saving boys and girls from ignorance and waywardness. That the people in California believe in saving young people as well as dollars, and that when a choice must be made they choose to save children rather than dollars, is evidenced by the tremendous majorities given school bond issues and the recent tendency to increase the majorities given such bond issues.

There are, of course, some citizens who would reduce school expenditures regardless of the effect of such reduction on the efficiency of the schools. There are others who urge that the schools are not as efficient as they should be and for that reason should have their revenues reduced. It is admitted that the schools are not perfect; in fact, they are far from perfect. However, these imperfections are due for the most part to the fact that they are only human institutions. They are imperfect in just the same way that civilization is imperfect. Can it be said that the government, or the church, or business, or any other human institution is more nearly successful? Would we reduce the revenues of any of these institutions on the ground that they are not so efficient as they should be? The absurdity of any such policy need not be argued. The remedy for imperfection in any institution is not to be found in the reduction of revenue, but in the improvement of the people who conduct the institution. If the schools of California are to meet the demands made upon them more fully than they have been meeting them, the state must furnish better opportunities for teacher-training. There is no place in the whole school system where a dollar will bring greater return to the state than in the teacher-training institutions of the state. It is in such institutions that the correction of the defects in our school system can best be made.

Suggested Economies.

It is possible to effect economies in school administration without impairing the efficiency of the schools. One of the chief savings that might be effected is in the school building. There is no justification for the elaborateness or ornateness of school building construction which is observable in many communities. School buildings should be substantial and of artistic design, and such buildings may be built at much less cost than the over-adorned and over-equipped buildings of which there are too many examples in California. As a matter of fact, the artistic effect of school buildings is destroyed by over-ornateness. A great saving could be effected by the adoption by local boards charged with the construction of school buildings of a modest type of construction.

Another considerable saving can be effected by reducing the number of weak school districts in California. Every new school district created in the state adds $1,400 a year as a minimum to the expenses of the state and county. Every weak school district that is nursed along by the importation of a widow teacher with several children or by other questionable means adds to the burden of taxation in the amount of at least $1,400 a year. It is my opinion that at least a quarter of a million dollars each year might be saved by lapsing school districts that have ceased to justify themselves. Districts remote from other district schools must be saved even though they are weak because the children in such district must be educated. But districts with small attendance within two or three miles of other schools and on well paved roads should be lapsed and the money spent on their upkeep saved to the taxpayers. Already a good beginning has been made along the lines of this suggestion. However, legislation will be necessary before this needed reform can be fully accomplished.

SCHOOL BUILDINGS.

The people of California are justly proud of their buildings. Nowhere in the world, I believe, can better public school buildings be found. In recent years, school boards have been erecting more substantial buildings, many of them fireproof. I wish to commend the policy of building fireproof structures wherever fire risks are extraordinary and wherever community wealth justifies the undertaking. During the last year, several large school buildings of nonfireproof construction were destroyed by fires, evidently of incendiary origin in most cases. The total losses due to such fires exceed $1,000,000 for last year alone. The fire losses in cities like Woodland, Oakland, Alameda and Los Angeles, and losses of less degree in smaller communities, during the last year, give point to the recommendation that fireproof school buildings be erected in places that can afford such type of construction.

CODIFICATION OF SCHOOL LAW.

The school law of California has not been recodified since 1872. During the last fifty-two years, the laws relating to schools have been amended and added to without reference to any comprehensive plan. It is not uncommon to find a single topic treated in three different sections of the code and in three conflicting ways. The school law is

perhaps twice as voluminous as it should be. The courts in passing upon cases involving interpretation of the school law have frequently remarked the need for codification.

Among the chief reasons for the verbosity and generally unsatisfactory condition of the school law are the following:

First, the dual system of credentialing teachers due to the provision of the constitution that certification of teachers shall be in the hands of the county boards of education. An elaborate scheme of credentialing teachers is outlined in the law to govern the state board of education. A similarly elaborate scheme of certification is outlined for county boards of education.

Second, the plan of legislating for all school districts uniformly. It is absurd that a statute made to fit the needs of little school districts in the mountain counties should apply in all particulars to city school districts like Los Angeles and San Francisco. And it is equally absurd that a grant of power to city school districts like Los Angeles and San Francisco should apply to the smaller school districts of the state. The school law is generally complicated by amendments, provisos and exceptions to general regulations due to an effort to meet the great variety of situations in the school districts of California. Moreover, crude attempts to classify school districts according to number of teachers, or number of pupils, appear in the statutes. I am very doubtful whether any such classification is constitutional. It would be most unfortunate if a court should upset such classification on the ground that it is unconstitutional. The remedy is to work out a classification of school districts that will be constitutional and will at the same time give communities varying greatly in size and in school problems an opportunity to meet these conditions reasonably and without undue hampering.

The codification should not involve recommendations for organic changes. It should seek simply to eliminate conflicts, to cut out surplusage, to simplify and rearrange the various provisions of the law. Any attempt to reorganize the school system under the guise of codification is foredoomed to failure. I believe that a special commission should be appointed to consist of the Superintendent of Public Instruction, the president of the State Board of Education, the Attorney General, a county superintendent of schools and a district attorney, together with two senators and two assemblymen, such commission to be charged with the responsibility of codifying the school law and provided with sufficient funds to employ the assistance necessary for accomplishing the task.

REVISION OF THE COURSE OF STUDY IN THE ELEMENTARY SCHOOLS.

The making of the course of study of the elementary schools by legislation has not been successful. California has prescribed by law the teaching of no less than twenty-seven subjects in the elementary school whereas the average number of subjects prescribed in other states is fifteen. No other state approaches California in the number of legally required subjects. The situation would be acute if it were not for the fact that makers of courses of study have complied with the law only technically. Strict compliance with the statute would make real elementary education almost impossible.

Recognizing that a scientific reorganization of the course of study is necessary, the superintendents at the annual convention in 1923 asked me to appoint a committee to consider ways and means of effecting such revision. The committee soon came to the conclusion that a mere revision of the list of subjects would not suffice; that what is needed is a scientific analysis of the material now offered in the various subjects, including the old-time subjects, with a view to the elimination of obsolete and nonessential matter. To make such analysis a considerable fund is necessary. The appropriations made for the office of the Superintendent of Public Instruction were not sufficient to make such investigation possible. I therefore applied to the Commonwealth Fund of New York for a grant sufficient to enable the committee to undertake the work. A grant of $18,000 was very graciously made and plans for carrying on the investigation were formulated during the summer of 1924.

Following is the plan finally adopted:

Plan of Organization.

The Superintendent of Public Instruction to whom the grant was made will be the general director of the investigation and of all efforts to secure acceptance of the results of the investigation by authorities charged with making the course of study. He will coordinate the work of the two committees.

There shall be two committees, each consisting of eight or nine members charged with the two phases of the enterprise, (1) the research phase, and (2) the phase of application of the findings to courses of study.

The research committee will nominate the active director, pass upon his plans for investigation and critically evaluate the results of the investigation before they are submitted to the general committee.

The general committee will consider and criticize the findings of the investigation, and assist in securing acceptance thereof by authorities charged with the making of courses of study.

The research committee will consist of the following members:

W. W. Kemp, Dean of School of Education, University of California.
J. C. Almack, Dean of School of Education, Stanford University.
Virgil Dickson, Director of Research, Oakland Schools.
Robert H. Lane, Director of Research, Los Angeles Schools.
C. L. Phelps, President Santa Barbara State Teachers College.
B. M. Woods, Representative of the President, University of California.
A. O. Leuschner, former Dean of Faculties, University of California.
H. B. Wilson, Superintendent of Schools, Berkeley.
Grace C. Stanley, State Commissioner of Elementary Schools.

The general committee will consist of:

Arthur Walter, City Superintendent, Salinas.
Susan M. Dorsey, City Superintendent, Los Angeles.
Fred M. Hunter, City Superintendent, Oakland.
Joseph Marr Gwinn, City Superintendent, San Francisco.
Mark Keppel, County Superintendent, Los Angeles.

Ira C. Landis, County Superintendent, Riverside.
Mamie B. Lang, County Superintendent, Tehama.
William John Cooper, City Superintendent, Fresno.
F. W. Thomas, Vice-president, Fresno State Teachers College.
E. P. Clarke, President State Board of Education.

The active director will be charged with the duty of outlining plans, appointing his assistants and making the investigation, subject to approval by the research committee.

The University of California will act as depository and auditor of the funds.

The University of California will furnish quarters for the director and his assistants.

NECESSARY ADJUSTMENTS AND ELIMINATIONS DUE TO DECREASE IN APPROPRIATIONS.

Adjustments in Superintendent's Office.

The budget of 1923 made a considerable reduction in the appropriations for the support of the office of Superintendent of Public Instruction and State Director of Education. In spite of these reductions the office has made every effort to carry on its constitutional and statutory functions as fully as possible. However, it has not been able to maintain all its functions unimpaired.

The following statement of adjustments made necessary by budget reductions is made:

(1) No increase in the salaries of the assistant superintendents has been made in spite of the fact that these salaries are forty per cent less than salaries paid assistant superintendents employed by the state board of education. The salaries of assistant superintendents in my office are at the rate of three thousand dollars per annum whereas the salaries of assistant superintendents employed by the state board of education are at the rate of $4,500 to $5,000 per annum. Such a discrepancy in salaries for employees of the same rank can not be justified.

(2) The Assistant Superintendent in charge of the important work of Americanization was obliged to take a leave of absence without pay for approximately three months in 1923 because of lack of funds to pay her salary. The Supervisor of Attendance took a similar leave of absence during the summer of 1924. Only the loyalty of these employees to the interests of the state enabled me to retain their services under such conditions.

(3) The office of Deputy Director of Education has been all but technically abolished because no appropriation for salaries was made. The business of the division of normal and special schools has been hampered because of lack of funds to employ clerical assistance necessary to check claims and salary rolls. Every claim has been passed by me merely as a matter of form with a specific disclaimer of responsibility for accuracy because no funds are available for checking claims.

(4) The appropriation was insufficient to enable me to publish the school law which the law requires me to distribute to superintendents, trustees and other school officials.

Adjustments in the Teachers Colleges.

Adjustments in the teachers colleges and special schools reported to me in September, 1923, as being necessary to meet budget cuts and keep a sufficient reserve to take care of the normal increase in enrollment during the second year of the biennial period were as follows:

Santa Barbara State Teachers College.

I am reporting at this time the adjustments in this institution made necessary by the reduced appropriations. We have had to eliminate the Music Department as a whole, leaving one person for half-time only to cover statutory requirements in that subject.

The specific cuts were as follows: Head of Department of Music at $2,700 and one part-time person at $135 per month, who should have been retained upon a full-time basis.

In the Home Economics Department, one person at $1,800 was eliminated. It will be absolutely necessary to replace this person with one on half-time.

Among the employees, we have eliminated one man at $1,140 from the grounds force, and one woman at $900 from the janitorial service. We have also eliminated the telephone girl at $25 per month.

I believe this covers the eliminations. The support fund is practically what it was before.

(Signed) C. L. PHELPS,
President, Santa Barbara
State Teachers College."

Chico State Teachers College.

Find listed below all positions eliminated because of budget cuts:

Supervisor of Industrial Arts Department	$2,600 00
Supervisor in Kindergarten-Primary Department	$2,400 00
Assistant Librarian in Training School and College	$1,200 00
Two Student Assistants in English Department	$1,000 00

The entire extension work of the school, eliminating the work of one hundred sixty students.

Correspondence courses, eliminating fifty students.

Our Industrial Arts Department is one of our strongest departments. The instructor in charge has been granted a leave of absence for one year and a portion of the work will be carried by the Art and Kindergarten-Primary Departments. We can not satisfactorily carry on this arrangement for more than one year.

The dropping of the other lines of work means that the regular members of the faculty must assume just that much more work, and they are now pretty heavily burdened.

The extension and correspondence divisions have both been very important pieces of work. They have practically revolutionized the work of the teachers in northern California. The elimination of this work is one of our hardest blows.

In addition to the elimination of these two departments, two of our regular teachers are being carried on the city of Chico payroll.

The budget practically eliminates five and one-half full-time teachers.

(Signed) C. M. OSENBAUGH,
President, Chico State
Teachers College.

San Diego State Teachers College.

In response to your request of July 18th, I enclose, herewith, a statement showing the situation as to the effect of the official state budget and appropriations made thereunder, upon the list of positions in this institution.

It is evident from this statement that the situation is that we shall have funds for the seventy-fifth fiscal year somewhat exceeding the funds available in the seventy-fourth fiscal year. Therefore, there will be practically no elimination of positions; but there will be, on account of the appropriation deficiency shown in the statement, a transfer of positions from state support to support by the high school district of San Diego and by the student fund for the summer session, 1923.

The appropriation deficiency, taking into account the balance in the salaries fund carried over from the seventy-third to the seventy-fourth fiscal year, is $6,323.75. It is rather difficult to single out the positions transferred from state support to city support and student-fund support by reason of this deficiency. The fact remains that the budget necessitated these transfers and the consequent increase of local support.

As to maintenance, it is probable that, with the increase in the appropriations for support made to cover the appropriation of fees by the general fund of the state, there will be funds to cover losses of the income represented by our former contingent fund.

(Signed) EDWARD L. HARDY,
President, San Diego
State Teachers College.

California Polytechnic School.

Twelve teachers and eleven employees eliminated on account of budget reductions. The commercial, household arts, music and art courses were eliminated, and the mechanics and agriculture courses curtailed considerably.

(Signed) C. L. SLUSHER,
Business Manager,
California Polytechnic School.

San Jose State Teachers College.

In response to your letter of July 18th, the following eliminations have been made at the San Jose State Teachers College as a result of the reduced budget:

Supervisor of Rural Education, salary	$2,700 00
Instructor in Art, salary (part-time)	900 00
Instructor in Home Economics	2,100 00
One Training School Instructor	2,100 00
Instructor in Agriculture and Nature Study	2,520 00
One Librarian	2,040 00
One Instructor in English (reduced from full-time to half-time) salary reduction	1,000 00
One janitress	900 00
	$14,260 00

(Signed) A. R. HERON,
Acting President,
San Jose State Teachers College.

Fresno Teachers College.

Replying to yours of the 18th instant, with reference to positions eliminated from the teachers college here because of budget cuts, it is rather a difficult matter to give a definite and detailed reply. While cuts have not required that we eliminate anyone from the combined teachers and junior college, we have been compelled to transfer to the Fresno city payroll one instructor in physics, one instructor in physical education for men, and one for women, one instructor in foreign languages, one instructor in English, one in social science, one in agriculture, one in biology and one in mathematics.

I trust this information will meet with your requirements.

(Signed) C. L. MCLANE,
President,
Fresno Teachers College.

Humboldt State Teachers College.

Reductions in appropriations, Humboldt State Teachers College, Arcata, California; 75th and 76th fiscal years.

The support reductions will make eliminations as follows:

Library books	$2,400 00
Laboratory equipment and supplies	3,000 00
Grounds	1,000 00
Lectures	500 00
Team hire	400 00
Exchange of typewriters	250 00
Supplies	160 00
	$7,710 00

(Signed) N. B. Van Matre,
President,
Humboldt State Teachers College.

San Francisco State Teachers College.

It was necessary to eliminate two instructors in music, one in art, one in hygiene, and two assistant librarians. It was also necessary to do away with the entire department devoted to overcoming speech defects such as stammering, stuttering, and foreign accent. The special training of kindergarten teachers for children of foreign speaking parents was given up. Several part-time instructors in the sciences were stricken from the roll. All provision for summer sessions work was disallowed in the budget so that our regular instructors probably will have to donate part of their vacations to the public service in order to keep the summer sessions going.

(Signed) Frederic Burk,
President, State Teachers
College of San Francisco.

The attached table sets forth the numbers of positions involved in the adjustments described above. I am pleased to be able to report that in the cases of certain of the teachers colleges the cooperation of the local communities has made possible the restoration during 1924-1925 of a small number of the positions eliminated during 1923-1924.

Table Showing Reduction in Personnel by Reason of Budget Reduction as Reported August, 1923.

	Number of positions abolished		Number of people transferred from state to local payroll		Total number of positions abolished or transferred		Amount of contributions for biennial period by local districts for employment of teachers at college
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	
Santa Barbara State Teachers College	1	2	3	1	4	3	$17,300 00
Chico State Teachers College	3	2	2		5	2	10,000 00
San Diego State Teachers College			5	2	5	2	36,000 00
California Polytechnic School	23				23		
San Jose State Teachers College	7	1			7	1	23,260 00
Fresno State Teachers College			9		9		58,600 00
Humboldt State Teachers College		1				1	
San Francisco State Teachers College	9*				9*		
California School for the Deaf (Teaching)	2	2			2	2	
California School for the Blind (Teaching)	2	2			2	2	
Business and Service California Schools for Deaf and Blind	5				5		
Sacramento Office Division of Normal and Special Schools	3				3		
Totals	55	10	19	3	74	13	$145,160 00

*Partially replaced by part-time people.

REPORT OF THE DEPUTY SUPERINTENDENT OF PUBLIC INSTRUCTION.

RURAL SUPERVISION.

HON. WILL C. WOOD,
Superintendent of Public Instruction.

SIR: In 1920 the people by a very substantial majority adopted Constitutional Amendment number sixteen which provided better support for the elementary and secondary schools of the state. The legislature of 1921, in giving statutory effect to the constitutional provisions, for the first time in the history of the state, endeavored to place the rural schools more nearly on a parity with the urban schools.

While for years the city school systems had provided for supervision through city superintendents, supervising principals, and supervisors of special subjects such as music, art, manual training, domestic arts and physical education, the rural schools have had to be content with the cursory annual or semiannual visits of the county superintendents. Increasing responsibilities of administrations due to new requirements and added population, made these visits of the county superintendents less and less effective in their supervision of the rural schools. The legislature, recognizing this condition, in its 1921 session amended section 1858 of the Political Code so as to provide an emergency and supervision fund for rural schools. Previous to 1921 school districts having an average daily attendance of 700 or more in the elementary schools were allowed two additional teacher units for each 700 pupils in average daily attendance. This provides in part for supervision in city school systems. In 1921 section 1858 was amended so as to give one additional teacher unit for each 300 in average daily attendance to elementary districts having an average daily attendance of 300 or more, and one additional teacher unit for each 500 pupils or major fraction thereof in average daily attendance in the county at large, exclusive of the elementary districts having an average daily attendance of 300 or more. This latter is the basis of the rural supervision fund. It is the first recognition the state has given that children in the rural schools are entitled to the same educational advantages as is received by pupils in the city schools.

Strange as it may seem there are people who fail to realize that supervision is essential to good teaching. In this connection I can do no better than quote from the introduction of the report of County Superintendent C. H. Nielsen of Butte County, on rural supervision.

> "It would seem that it should be self-evident that supervision of teaching is of such value to teaching and hence of such great importance in the country that it should have the unqualified support of all who wish to see progress and not retrogression in our national life. It would hardly be denied that the education of our boys and girls is their foundation for citizenship. And upon this education the future welfare of the nation depends.
>
> Supervision has always existed in other fields of endeavor and its value is so self-evident that no one would think of dispensing with it. A road would not be built by a crew of men without someone to supervise

the work, no matter how skilled in road building the crew of men might be. The building of lives is surely as of great importance as the building of roads. And supervision in the field of education, where lives are built, is just as essential to the securing of uniformly good teaching as the supervision of the crew of men is in the securing of uniformly good roads."

So patent to superintendents were the needs of real rural supervision that as soon as the statute permitting it became effective it was put into nearly every county where the law permitted it. Some few counties had under their county government acts employed supervising teachers with the title of visiting deputy superintendents prior to 1921. Generally speaking, however, rural supervision has been in effect since the fall of 1921.

Types of Supervision.

The supervision reported may be classified as general and special.

The general supervision, as its name implies, consisted of the supervision of all the subjects of the course of study, and in addition thereto assistance in solving all the problems of the teacher which, left unsolved, might cause her failure not only as a teacher, but as an individual as well.

Special supervision may be subdivided into two classes, (a) the supervision of special subjects as Americanization, music, art, physical education, agriculture, penmanship and visual education, (b) scientific survey.

As an instance of the supervision of Americanization the following is quoted from the report of Miss Louise Clark, superintendent of Sonoma County:

"*Statistical Report, September, 1923–July, 1924.*

Number of Americanization centers		12
Number of classes		21
Number of English classes		16
Number of citizenship classes		5
Total enrollment		478
Men	321	
Women	113	
No data	44	
Nationalities represented		27

Citizenship.

Applicants for first papers—	
1923	65
1924	114
Petitioners for second papers—	
1923	17
1924	46

At the May naturalization hearing 10 of the 40 applicants for citizenship had attended the evening classes. All were passed with honors and were presented with diplomas by the United States Government.

In a survey of 5000 minors in the rural school districts 30 per cent were found to be of foreign-born parentage."

To succinctly explain the second division of special supervision,

scientific survey, the following extract is given from the report of Superintendent William H. Hanlon of Contra Costa County:

"When the supervision and emergency fund was established, I followed the usual procedure and appointed some supervisors of special subjects. It soon became apparent that such a plan was only 'pecking,' that it was my responsibility to know in an objective manner how well the schools were doing in giving the fundamentals of an education and where improvements in procedures and increased efforts were necessary.

Briefly, I used part of the supervision and emergency funds to employ expert service to measure the products of the schools in this county. It was necessary to know by the most accurate measures available of the pupils and in the light of these facts determine whether or not the school was doing as well for each individual pupil as possible. In short, we are trying to fit the school to the pupil rather than the pupil to the school as has been the tendency in the past.

This program has progressed to a point where we can justly tell that teachers now think of their pupils as individuals, have accurate knowledge of the capabilities of each and are endeavoring to teach so that each child gets the most possible for him out of school. This to my mind is the best evidence that we are at least on the way to realizing our responsibility toward the children and patrons of seeing to it (as far as is within our power) that school money is getting the best possible returns in terms of human betterment.

The supervision fund has further made it possible to have a scientific survey made of the school buildings and equipment of the county, and as a result we have a recommended program of building, consolidation, regrouping of schools, etc., such as when completed will give this community an ideal school system. We recognize that such a program will be difficult to put over and will take years but we get great satisfaction in seeing that each local improvement in the way of building or reorganization is so 'steered' as to be an accomplishment of the program. In short, we are daily moving toward the ultimate accomplishment of a definite plan instead of helplessly allowing local ambitions to carry out building plans that have no connection with a general plan, and which in a few years will prove to be narrowly conceived, and a large part of the people's investment wasted."

Results of Rural Supervision.

The results of supervision, such as are measurable in so short a time after its institution, are here considered under the following heads: (a) influence of supervision upon the community; (b) influence of supervision on the teacher; (c) influence of supervision on the pupil.

The following quotation from the report of Superintendent L. E. Chenoweth of Kern County indicates the great value to the community of rural supervision.

"It is difficult to give in a brief paragraph a measure of results obtained from rural supervision. The marked improvement of the rural school over the brief period that supervision has been in effect, is the best argument in favor of rural supervision.

Teachers are now checked up regularly, and as a consequence the work is kept in proper shape at all times; the school buildings and school grounds are cleaner and better kept, and the country children are receiving training which was available formerly only in the city schools.

As a concrete example of school improvement, our record shows that nineteen rural schools reached a condition known as Superior Standard, and twelve schools reached a condition known as Standard, making a total of thirty-one schools which, during the school year, met the very strict requirements for providing the best school facilities during the school year. These facilities include: sanitation of school grounds and buildings, management of light, heat and ventilation, condition of the

pupils and instruction given in the school, and require fifty points of perfection, to place the school in what is known as the Standard class. A Standard school is a practical, workable, livable, rural school, taking the place of the neglected, decrepit, run-down, forlorn institution, which has so long been a tragic joke. The patrons, community organizations, trustees, and all lovers of education, once their interest was awakened by the supervisor, contributed to the improvement of the school property, which in turn increased the value of the real estate surrounding the school, and bettered the community life.

Under the direction of the music supervisor, social gatherings, farm bureau meetings, and community meetings of all kinds have been enriched and improved. By arranging programs, country life has been bettered in many communities by the music supervisor, and through talks on home improvement, interior decoration and kindred subjects by the art supervisor.

During the first year of supervision, nearly fifty of these meetings were attended and participated in by the supervisors and the demand has grown so great, that it is now a question of attending such meetings as time will permit. An accurate record is kept of each meeting attended, the number of people present, and the result obtained.

Pupils with particular talent have been discovered by the supervisors, and placed in courses which led to their educational and financial advancement. Misfits and failures have been found and assisted to become useful factors of the community."

More attention was naturally given by superintendents to the effect of supervision on the teaching force since the contact here is closer than between either the community or the pupil and the supervisor. While some instances are quoted of a lack of cordial relationship between a small minority of teachers who refuse to be budged from their fixed and predetermined views, the great mass of teachers welcome the aid of the "helping teachers." The following incidents reported by Superintendent Ida M. Collins of San Bernardino County are illuminative:

"We have had many a teacher who would have given out and ceased to give of her best but for the impetus of the visiting supervisor and the thought that a visit was soon at hand when she could unburden her soul and get a fresh hold. One striking example was in a little railroad town in the midst of the desert, where a young teacher was getting her first experience, both with trying to live in an isolated community, where she was the only unmarried woman (and incidentally, the only one who did not smoke), and in teaching school. The discipline was hard, the school was composed mostly of boys, and they were getting away from her.

The supervisor came unexpectedly one day, saw her work, sensed her problem, stayed all night and so had a chance to thrash the thing out. She gave the teacher ideas for a school garden and simple problems in manual training (the children could bring the tools from home), and started the idea of a Boy Scout troop. The teacher welcomed the suggestions and when the supervisor came the next time the school yard had gardens, carefully fenced by the boys, plans were under way for a fountain and bird bath, as this was one of the few places where water was abundant, letters had been written for the seeds and this had motivated language; the boy scout master from the county seat came out and the boys were organized, etc. This all carried over into the home life and the parents were delighted, the school was running smoothly as the feeling between the teacher and pupil had been put on a different basis, both teacher and pupils were eager for the visit of the supervisor so that she might see what had been accomplished. This teacher puts her success up to the timely suggestions of the supervisor. The community offered this girl $1,600 to come back but she had been sought by a desert community where junior high school work was to be started and they wanted such a teacher.

Another teacher, used to the best in the way of supplies, school room, and living conditions in a city system, came to the country and took a one-room school for a year. She felt herself much above the community and was very dissatisfied and disliked to take suggestions from the supervisor about methods which might be better suited to her present environment, as she felt she had had years of teaching in much bigger and better places and did not need the supervision. The community felt her criticism and dissatisfaction and told the supervisor they wanted to get rid of her before the end of the year if possible. To overcome this difficulty the supervisor sent this teacher to a near-by community where the conditions were much worse, the school house much inferior, and the classes of children harder to work with. Here she found an enthusiastic teacher making the best of circumstances, giving her youngsters the best she knew, making their lives brighter by bringing to them rays of her experience with the outside world, etc. Our disgruntled teacher went back to her community determined to make good with both community and children as she realized how much a good teacher had to give to such a far away community. She did make good, and thanked the supervisor for the lesson and the opportunity to make up for her failure."

Out of the numerous instances reported by the county superintendents of the beneficial influence exerted by the rural supervisor on pupils, these two taken from the report of Superintendent A. G. Elmore of Stanislaus County have been selected as characteristic:

"Leland and Merrill were the only eighth grade pupils in a small rural school, and both boys over age—fifteen. Leland was a handsome chap of more than average ability, but through irregular attendance, indifference and lack of home interest, had missed a year or more along the way. Merrill had come from an Oakland school with a transfer for the high eighth grade, but as there was no high eighth in this school he was in the same class with Leland. Either boy was harmless by himself, but together they made a disciplinary problem that was almost more than the teacher could handle.

Many times I tried to talk to them but they evaded all questions and confidences. Then as school was about to close for institution and Thanksgiving, it all came out—they were planning to quit and not come back. They figured that they looked like sixteen years old and that they could say they were and they were going to work. They considered themselves young men and they resented 'being with these kids in a one horse school' as they expressed it.

I told them that if they would come back and do some good work, so that I could recommend them, I would try and see if I could get them into high school at the mid term in February. They replied that the fellows in town could go in then but they would not take anyone from the country schools. I said, if they would promise to do their part I would guarantee to do mine. I then went to Mr. Morris, the principal of the high school, and explained the situation to him. He said, 'Yes, we will give the boys a chance and take them right now if you say so.'

But I thought it was better for the boys to work out their own salvation and prove their good intentions.

The work they did in the next three months not only surprised me, but themselves as well. When the mid term opened, I took them in and introduced them to Mr. Morris who personally helped them to make out their programs, inquired what they wanted to do in athletics and proved himself to be the 'dear old Jim' that he is to all the boys.

Leland was on the honor roll the first quarter, Merrill not until the end of the term.

The next September I was driving along the road when I was hailed by a young fellow on a huge load of hay. I stopped and who should come to talk to me but Leland. I expressed my disappointment that he was not back in high school and he told me he was leaving in three days for Kansas City. Thru his high school work and a correspondence course he had taken he had secured a scholarship in some school of

technology in Kansas City with the prospect of being able to get another scholarship that would take him to the Boston school of technology or to one in Chicago. He was enthusiastic and excited.

The last I heard from him he was doing good work, progressing rapidly and thoroughly enjoying his traveling experiences.

Merrill is still in high school and is a credit to himself and the school.

Angelina was a big, overgrown, untidy girl, without much ability, in the eighth grade of a one teacher school. She did not care about any school work except drawing and she certainly could draw—if she had more originality she would be an artist.

We tried to use her love of drawing as an incentive for her to enter high school, but she would show no interest and assured us that she was only waiting for her sixteenth birthday so she could quit school.

One day she admired the dress I had on and said so much about it that I said, 'Why Angelina, this dress cost only $1.35 and I made it myself. You could make much prettier clothes for yourself and your sisters if you would only go to high school and take a course in sewing.' She seemed much impressed and the teacher reported an improvement in her school work and in her personal appearance from that time.

The next time I visited that school, I took out samples of sewing and cooking that the high school girls had done and explained to Angelina the advantages of a high school course.

By the time school closed Angelina was quite enthusiastic about going to high school. She worked in the cannery all summer and earned enough to buy some presentable clothes for school and enrolled with the fall class. She is taking English, English Composition, Sewing, Cooking and Drawing, and doing well in all of them. The much needed lessons in foods, balanced meals, cooking and sewing are being given to her family in a very satisfactory way.

At the close of school the high school girls had an exhibition and demonstration of their work and served the foods they had cooked, wearing the clothes they had made. When I saw Angelina, I was astonished. The neat, alert girl I saw there was a different creature from the Angelina of the Cole school. When I realized what a handicap she started with I appreciated how far she had gone in a year.

So many improvements have been made in her home and the whole family has taken a big step forward. Two of her friends, girls who left grammar school two years ago, have now entered high school thru Angelina's interest and influence and are making as marked improvement in themselves and their homes.

Angelina is hoping to become an illustrator for advertisements but I do not know whether she has enough originality for that or not, but whatever else she does or does not do, she is raising the standard of living in her whole neighborhood and that is the most effective kind of Americanization work."

How Superintendents View Supervision.

Every county superintendent finds in rural supervision one means whereby the rural school may be stimulated to do its best to give the pupils an opportunity to be prepared for their places in life. Superintendent Charlotte Cunningham of Shasta County has summarized the matter as follows:

"I consider school supervision has done more to solve the problems of the rural schools than any other recent legislation.

As a school superintendent, I have always deplored the fact that a country child was deprived of the advantages of a city child. For years, city teachers have been supervised and helped in their work. Rural supervision is at last equalizing opportunities of the country and the city child.

While it remains impossible for rural schools to secure properly trained teachers, their improvement during service is imperative. Rural supervision is the only agency whereby this may be accomplished.

Let's make our slogan: 'Give the country child the same advantages as the city child'."

The total cost of rural supervision in 1923-24 was $320,356, all of which was paid out of funds raised under the provisions of Constitutional Amendment No. 16 and related statutes.

Respectfully submitted.

SAM H. COHN,
Deputy Superintendent.

REPORT OF STATE SUPERVISOR OF ATTENDANCE.

HON. WILL C. WOOD,
Superintendent of Public Instruction.

SIR: The work of the supervisor of school attendance for the period of the school years of 1922–24, in accordance with the directions of the Superintendent of Public Instruction, has included the following:

I. *Continuance of effort to secure a uniformly consistent interpretation of the compulsory education laws of California through assistance given to the superintendents of schools and by furthering the appointments of competent supervisors of attendance in the cities, counties and districts needing them.*

The tabulation which follows was made from replies to a questionnaire sent to the city and county superintendents of schools in April, 1924, and shows the extent to which appointments had been made to that date:

Distribution by Counties.

1. Alameda:
   County—One, full time.
   Cities—Alameda—One, part time.
   Berkeley—One, full time.
   Oakland—Director of Attendance and four full-time and one part-time assistants.
2. Contra Costa:
   County—One, full time.
   City—Richmond—One, full time.
   District—One, part time.
3. Del Norte:
   County—One, part time. Office combined with that of probation officer.
4. El Dorado.
   County—One, part time.
5. Fresno:
   County—Two, full time.
   City—Fresno—One, full time.
   Districts—Two, part time.
6. Glenn:
   County—One, part time. Office combined with that of probation officer.
7. Humboldt:
   City—Eureka—One, full time.
8. Imperial:
   County—One, full time.
9. Kern:
   County—One, part time. Office combined with that of supervisor of physical education.
   City—Bakersfield—One, full time.
   District—One, part time.
10. Kings:
    County—One, full time.
    District—One, part time.
11. Lassen:
    Districts—Two, part time.
12. Los Angeles:
    County—One, full time.
    Cities—Long Beach—One, full time.
    Los Angeles—Director and eighteen full-time assistants.

Pasadena—Two, full time.
Pomona—One, part time.
Santa Monica—One, full time.
District—Fifteen, seven full time and eight part time.

13. Madera:
County—One, part time. Office combined with that of probation officer.
District—One, part time.

14. Merced:
County—One, part time.

15. Modoc:
County—One, part time. Office combined with that of probation officer.

16. Monterey:
County—One, full time.
District—One, part time.

17. Napa:
District—Two, part time.

18. Nevada:
County—One, part time. Office combined with that of probation officer.
City—Grass Valley—One, part time.

19. Orange:
County—One, full time.
City—Santa Ana—One, full time.

20. Plumas:
County—One, part time.

21. Riverside:
County—One, full time.
City—Riverside—One, full time.
District—One, part time.

22. Sacramento:
County—One, full time.
City—Sacramento—Director and two assistants.

23. San Bernardino:
County—Two, part time. Office combined with that of health work.
City—San Bernardino—One, full time.
District—One, part time.

24. San Diego:
County—One, full time.
City—San Diego—One, full time.

25. San Francisco:
City and county—One Director and three full-time assistants.

26. San Joaquin:
County—One, full time.
City—Stockton—One, full time.

27. San Luis Obispo:
County—One, part time. Office combined with that of game warden.
City—San Luis Obispo—One, combined with that of manual training supervisor.

28. San Mateo:
Districts—Four, part time.

29. Santa Barbara:
County—One, part time. Office combined with that of rural supervisor.
City—Santa Barbara—One, full-time and one part-time assistant.
District—One, part time.

30. Santa Clara:
City—Santa Cruz—One, combined with that of probation officer.
District—One, part time.

31. Santa Cruz:
City—Santa Cruz—One, combined with that of probation officer.
District—One, part time.

32. Shasta:
County—One, part time. Office combined with that of rural supervisor.
District—One, part time.

33. Siskiyou:
County—One, part time. Office combined with that of probation officer.

34. Solano:
    County—One, full time. Office combined with that of assistant supervisor of schools.
    City—Vallejo—One, full time.
    District—One, part time.
35. Sonoma:
    County—One, full time.
    Cities—Santa Rosa—One, full time.
    Petaluma—One, part time.
    Districts—Two, part time.
36. Stanislaus:
    County—One, part time.
    City—Modesto—One, part time.
    Districts—Three, part time.
37. Tehama:
    County—One, part time. Office combined with that of health work.
38. Tulare:
    County—One, full time.
    City—Visalia—One, part time.
    Districts—Three, part time.
39. Tuolumne:
    County—One, part time. Office combined with that of school hygiene.
40. Ventura:
    County—One, full time.
    City—Ventura—One, combined with that of school nurse.
    Districts—Four, part time.
41. Yuba:
    County—One, part time. Office combined with that of health wok.

California's problem in school attendance being more a rural than an urban one, the emphasis of effort has been placed upon securing supervisors of attendance for the counties rather than upon extension of the service in the cities. If the foregoing listing of appointments were indicated upon a map of the state, it would appear that all the counties south of the Tehachapi are now supplied with county officers as are the counties of the San Joaquin Valley. Of the coast counties, those from San Diego northward to Monterey, inclusive, have made appointments, and also San Francisco, Sonoma and Del Norte. The bay counties, excepting San Mateo and Marin, are supplied. In the Sacramento Valley, appointments have been few. Of this group, Butte, Yolo, Colusa and Placer have immediate need of full-time officers. The same is true of Napa, San Benito, Lassen, Humboldt, Mendocino and Modoc. The remaining counties, mountainous ones with lesser population, do not need full-time attendance officers, but would probably be best served by combining the work of school attendance with the duties of a public health nurse.

Summarizing, the appointments made are as follows:

Counties with full-time supervisors of attendance	19
Counties with part-time supervisors of attendance	17
Counties with city and district supervisors only	5
Counties with no attendance officers of any kind	17
Total	58

The counties without attendance officers are as follows: Alpine, Amador, Butte, Colusa, Calaveras, Inyo, Lake, Mariposa, Mendocino, Mono, Placer, San Benito, Sierra, Trinity, Yolo, Marin and Sutter.

Elsewhere in this report figures are given on school attendance. They are expressed as *average daily attendance* (derived by dividing the aggregate of days of individual attendance in each district by the actual number of days taught in that district) and as *state enrollment*, which represents the actual number of pupils enrolled in the various types of public schools during a school year, each pupil being counted but once, but counted if in attendance for only one day.

These figures, while valuable and necessary for the apportionment of school funds, are inadequate as a measure of the enforcement of school attendance because (1) the state enrollment is not given in its relation to school age population; (2) the state enrollment is classified by type of school attended and not by the age groups governed by school attendance laws; the elementary enrollment, for instance, including children under eight years of age (the minimum compulsory age), and the high school enrollment, including all pupils in attendance whether beyond the maximum compulsory attendance age or not; and (3) comparison between the average daily attendance and the enrollment in any district must be interpreted in the light of local conditions to have any value as a test of efficiency. These conditions can not be stated in all their complexities. An average daily attendance which is high percentage of the enrollment may mean, on the one hand, that much effort has resulted in regular attendance, or it may mean, on the other hand, that the "difficult" children and the itinerants, whose stay in the district it was known would be brief, were not enrolled. Conversely, a low percentage of attendance in a school may mean poor attendance work or it may mean the best of effort in a community of varying population. Without a comprehensive continuous school age census with which the school register figures can be compared, there can be no reliable statistics on the efficacy of the compulsory education laws.

An effort has been made to have the school register more indicative of attendance conditions. A column has been added whose entries will throw into relief the times of absence of each pupil enrolled. The total days of absence added to the total days of attendance will give the actual days of enrollment. These figures taken in relation to the days that school is maintained should focus attention upon continuity of attendance.

Respecting the appointments of supervisors of attendance, the chief accomplishment lies in the improvement of personnel. This would appear to be due to a better understanding of the scope and value of attendance on the part of the superintendents of schools rather than to any increase in requirements of the supervisor of attendance credential set by the State Board of Education.

The day of the truant officer is definitely passing, although he may still be found here and there doing petty police duty. His place is being taken by the person who, first of all, is capable of interpreting the public schools to parents, to boys and girls and to the public; who can interpret a child's social and industrial environment to his teacher and who can present the enforcement of school attendance to the public as an enterprise calling for the best of community effort.

No county having put on a full-time supervisor of attendance fully certificated for the work, has discontinued the service. In each instance

it has been found to "pay" not only in increased average daily attendance and augmented school funds, but also in better school morale.

II. *The making out and distribution of forms for taking the annual registration of minors as required by section 1662 of the Political Code.*

In the fall of 1922, new forms for the registration were prescribed. They were made as simple as conformity with legal requirements and endeavor to make expenditure worth while, would permit. The same forms were used in 1923.

The law, as a state-wide instrument for the registration of minors, is a dead letter. Los Angeles and a few of the smaller cities have proved to themselves the value of a yearly count of their school age population. These places would no doubt continue the work even if the law were repealed. Other places need a registration but have never done the work well enough to profit by its possibilities.

The weakness of the present law lies chiefly in placing the responsibility for registering children with the parents and in fixing no penalty for failure to comply with the law.

Knowing the value of a complete registration and the inability of the present law to accomplish such, a bill was introduced in the legislature of 1923 to amend the section to effectiveness. This bill passed both houses, but was vetoed by the Governor. A second bill, carrying a repeal of the present registration of minors law, was then introduced and was passed by both houses, but it failed to receive the Governor's signature. Further effort to amend should be made in the legislature of 1925.

III. *The distribution of working permit forms and the filing of duplicates of all permits granted and of reports on violation of the Child Labor Law sent to the Superintendent of Public Instruction by the Commissioner of the Bureau of Labor Statistics.*

No change has been made in the working permit forms since 1921. It is recommended, however, that both forms and procedure used in the granting of working permits be made as nearly uniform as possible for minors coming under the provisions of either the part-time or the full-time compulsory education law. In view of the fact that all employed minors are required to attend the part-time school, it is obviously desirable that there be no division of jurisdiction in matters pertaining to the related employment. Any amendment to either law that may be introduced in the legislature of 1925 should include this objective.

The following tables give the number of working permits issued in 1922–23 and in 1923–24 as reported by the city and county superintendents of schools to the Superintendent of Public Instruction, and by him in turn to the Commissioner of the Bureau of Labor Statistics.

Number of Permits to Work Issued to Minors, 1922-23.

Counties	14 years of age	15 years of age	Between the ages of 14 and 16 to work during out of school hours
Alameda	7	128	113
Butte	2	0	0
Contra Costa	2	8	6
El Dorado	0	1	0
Fresno	0	9	30
Glenn	1	0	0
Kern	0	2	0
Lassen	2	0	0
Los Angeles	113	875	609
Madera	1	2	3
Marin	0	1	0
Mariposa	0	1	0
Merced	0	1	0
Napa	0	3	43
Nevada	0	1	0
Orange	1	4	0
Riverside	0	1	0
Sacramento	7	59	83
San Bernardino	1	10	0
San Francisco	30	365	86
San Joaquin	13	7	0
San Mateo	2	5	0
Santa Barbara	3	9	0
Santa Clara	1	1	0
Santa Cruz	3	7	2
Siskiyou	0	1	0
Solano	0	2	2
Sonoma	1	2	5
Stanislaus	0	6	0
Sutter	0	0	3
Ventura	0	1	0
Totals	190	1,512	986

Number of Permits to Work Issued to Minors, 1923-24.

Counties	14 years of age	15 years of age	Between the ages of 14 and 16 to work during out of school hours
Alameda	15	140	128
Contra Costa	1	5	7
Fresno	1	13	22
Humboldt	0	5	19
Imperial	0	2	0
Kern	0	6	0
Los Angeles	108	986	593
Madera	0	5	0
Marin	0	2	0
Napa	0	1	44
Orange	1	1	0
Riverside	4	14	18
Sacramento	4	69	66
San Bernardino	0	5	0
San Diego	0	11	113
San Francisco	40	283	52
San Joaquin	1	10	0
San Luis Obispo	0	1	0
San Mateo	0	1	1
Santa Barbara	0	7	4
Santa Clara	0	3	28
Santa Cruz	0	1	2
Sierra	0	0	1
Solano	0	9	0
Sonoma	0	4	4
Stanislaus	2	4	0
Tulare	1	0	6
Totals	178	1,588	1,108

IV. *The establishing and maintaining of schools for the children of migratory workers in the rural schools of the state.*

A report on this project, as carried on from September, 1921, to January, 1923, has been filed as a separate bulletin. It gives in detail the procedure in setting up and maintaining schools for migratory children in accordance with an act of the legislature of 1921. It describes the schools maintained in various harvest centers, particularly walnuts, cotton and asparagus, and states certain conclusions reached through the experiment.

The conclusion of first importance and the one which has determined the trend of effort subsequent to the closing of the first experimental schools is that for the school attendance of the children of migratory laborers a separate system of state schools is neither necessary nor desirable.

It has been found that under certain conditions of preparation and cooperation the existing public school system can be stretched to make room for the migratory children during their successive periods of stay in different districts, and that this can be done without undue financial burden upon any one district and without school confusion for the resident children.

The conditions are:

(1) Each county subject to seasonal influx of family labor must have the services of a competent full-time supervisor of attendance who, through cooperation with growers' associations, farm advisers and labor agencies, can anticipate the approximate number of children needing additional school facilities and can assist the trustees in providing them; who can make the compulsory education law known to parents and employers and who can interpret the emergency needs of a district to the county superintendent of schools.

(2) The financial burden should be shared by district and county—the district providing building, equipment and supplies, and the county (from the supervision and emergency fund) paying the salaries of additional teachers at least for the first year. In the initial year, when there has been no preceding increased attendance to furnish additional school funds, the school building has sometimes proved a financial difficulty and has led to the use of tents, partitioned-off ends of warehouses, empty houses and the like. At times, the growers have come to the rescue and provided housing. In fact, the most successful schools have had this assistance. Such aid is entirely optional with the growers, but when it has been given, school attendance has been increased by their interest and a better school has attracted and held better labor.

After the first year or two, the individual districts profiting by the returns on increased average daily attendance are able to carry on the work as part of the regular school business of the district and to make budgetary provision therefor.

Assistance to the district from the supervision and emergency fund is legitimate for all districts having an average daily attendance of less than five hundred and is usually available.

(3) There should be separate ungraded classes for all children who can not slip easily into the regular school because of language handicap or retardation. Individual instruction serves such children best and

can be more easily given in an ungraded class. Teachers trained in Americanization work have been most successful.

(4) When the agricultural work is very light and without hazards, there should be an adjusted school day beginning not later than the field work. This provides for the whole family leaving the camp at the same time, the adults going to the field and the children to school. It safeguards the children against working before school and from being left alone at the camp. It also means that the school day is over when the midday meal is ready. It provides also that the children may work in the afternoons. The last is not a concession to child labor; it is a concession to labor-camp life. The whole adjustment is made in view of what seems best for the child in relation to his camp life and arranges that when he is not in school he is with his family. The school session comes first and is a full session meeting regular requirements of time for study and recreation. The hours remaining for work can not then exceed five.

(5) There should be a state representative who cooperates with county superintendents of schools, county supervisors of attendance, growers' associations and labor supply agencies in making the enforcement of school attendance law uniform, and in demonstrating to the heads of families that this law is operative in every district in the state and can not be evaded by changing camp.

The second conclusion reached was that, while the school attendance of migratory children could be secured while in each harvest, their education by such start-and-stop method was a doubtful accomplishment. Even with the hundred per cent efficiency that would enroll the child upon arrival and keep him in attendance until departure, the time lost in transit between camps and the confusion incident to changes in teachers, school building, playgrounds and the like, would allow for little school progress.

It would appear that the problem of the education of migratory children must be approached not only with the mechanics of their school attendance in mind, but with the whole question of their migration as well. To this end it is recommended that the State Department of Education cooperate to the fullest degree possible with any effort to lessen the areas of migration of the "followers of the fruit."

Violations of Child Labor Law.

The Bureau of Labor Statistics has reported to the Superintendent of Public Instruction the following complaints of violation of the Child Labor Law received by his office during the school year 1923–24.

These have been classified according to type of violation, but it should be understood that the groups are not mutually exclusive:

Employed without permits	63
Employed at night	21
Employed in prohibited occupations	8
Employed in excess of eight hours per day	32
Employed under minimum age	7
Unclassified	56
Total	187

Immigrant Children.

The United States Bureau of Immigration reports to the Superintendent of Public Instruction the names, ages and addresses of all children under 16 years of age whose destination is indicated as California. These are in turn reported to the persons in charge of school attendance in the prospective homes of the little immigrants. During 1922-24, the following, segregated by nationalities, were reported:

1922–23

English	98
German	74
Dutch	15
Scandinavian	26
Magyar	2
Italian	92
Croatian	6
Hebrew	78
Slovak	9
Flemish	2
French	9
Greek	7
Hungarian	2
Welsh	2
Scotch	33
Armenian	44
Irish	17
Bohemian	1
Polish	4
Russian	6
Bulgarian	1
Spanish	7
Syrian	3
Mexican	484
African Black	1
Japanese	1
Total	1,024

1923–24

English	67
German	140
Dutch	9
Scandinavian	61
Magyar	1
Italian	82
Croatian	3
Hebrew	45
Slovak	5
Flemish	2
French	23
Greek	7
Hungarian	1
Welsh	3
Scotch	33
Armenian	19
Irish	17
Polish	7
Russian	26
Bulgarian	2
Spanish	6
Syrian	4
Turkish	11
Roumanian	2
Portuguese	4
Bulgarian	1
Serbian	3
Maltese	1
Mexican	784
Japanese	2
Total	1,371

REPORT OF THE ASSISTANT STATE SUPERINTENDENT OF PUBLIC INSTRUCTION.

In Charge of Adult Education.

HON. WILL C. WOOD,

Superintendent of Public Instruction.

SIR: In an interesting address before the British Institute of Adult Education, the Archbishop of York said:

"Society, after all, does not mean merely the arena in which individuals are free to develop themselves. It ought to mean a community which makes the best of its common life, drawing out the best in its members and giving them the best that has been treasured in the records of human thought, achievement and experience. The fulfillment of this ideal depends on education."

And again:

"Adult education must be the center of the whole educational system, the goal to which all its parts converge. At present it is largely regarded as a by-product. We give our main thought and care to the education of the young, to the origins rather than the ends of education * * *. All education—elementary, secondary, university—must be held together by one question, dominant at every stage: 'How can the largest number of adult citizens become and continue to be educated men and women?' "

This newer conception of education is as yet scarcely given general recognition anywhere. We still are committed to the theory that all formal learning ends when the individual sets out to earn a living, marries and becomes a part of a new family unit.

The exigencies of earning that living, however, established one kind of adult education—namely, vocational education—and so long as a man needed a special skill in order to get or hold a position he attended a class organized to teach the subject. Therefore, education for adults which has the definite aim of increasing their earning capacity has become generally accepted. The wider purpose of education as conceived by Aristotle, "To help men to use their leisure well," or by Plato as "The training for citizenship," has scarcely found its rightful place in our scheme.

Certain beginnings have been made in that direction. The United States of America, with its rapidly increasing foreign-born population, millions of whom could not speak the English language, had a specific impulse to adult education. That impulse, so strengthened by the war, has now given Americanization, or adult immigrant education, a firm footing in the public schools. California was well in the vanguard in this movement and because, on January 1, 1925, California will have had for five years a Department of Adult Education charged with the instruction of foreign-born adults, it seems suitable that the biennial report to the superintendent from the director of that department

should be a summary of the work from the beginning instead of a record of the details of the past two years.

This report, therefore, will review briefly the needs for such education in California, the efforts that have been made to meet the need and the general aims and purposes of the department, both for the present and the future.

Foreign-born Population in California.

California has had as much need as any state to offer educational opportunity to foreign adults. The 1910 census gave her a foreign population of 586,432; the 1920 census 805,049. The nationality showing the largest numbers in both 1910 and 1920 were Italians, most of whom came to this country with little or no knowledge of English.

In 1920, in California, there were:

Italians	88,502
Mexicans	86,610
Germans	67,180
English	58,572
Canadians	57,256
Irish	45,308
Swedish	31,925
Russian	27,224
Portuguese	24,517
French	20,387

An additional problem is created by those persons in the state who can not read or write a single word in any language, who can not even write their own names. In 1920 there were 95,592 such in California, of whom 5359 were native-born Americans.

California has 11 cities with a foreign-born population of over 5000. The 1920 census figures are as follows:

San Francisco	140,200	foreign-born
Los Angeles	112,057	foreign-born
Oakland	45,162	foreign-born
San Diego	13,295	foreign-born
Sacramento	10,873	foreign-born
Berkeley	9,573	foreign-born
Fresno	8,552	foreign-born
San Jose	7,820	foreign-born
Long Beach	6,799	foreign-born
Pasadena	6,785	foreign-born
Alameda	5,877	foreign-born

It is not only in the cities that one finds need for teaching English. There are vast areas which have no urban centers large enough to have city school systems with a school superintendent, where the union high schools take the children from all the country schools in the vicinity. This constitutes California's real educational problem for foreign-born adults. In his book, "The Schooling of the Immigrant," F. V. Thompson estimates that the foreign adult living in rural or semirural sections of the United States has one-eighth as much opportunity to become an

American as his countryman who settles in the city. If America is to avoid the overurbanization of the immigrant, the public schools of the country must find some way of offering more nearly equal opportunity. In California, 145 union high schools outside the cities report a sufficient number of adults unable to speak English, living in their districts, to justify at least one class. To reach this rural population has been the particular task of the state department of education.

In the cities the foreign-born are employed much as they are in cities throughout the United States—in laundries, canneries, needlework factories, ship building, and wherever large numbers of employees are found. They do the roughest and most unskilled work as well as that of the most highly trained artisans. The potteries at Lincoln are typical. In the yard, hauling rubbish, carrying heavy irons, lifting and heaving, are the unskilled laborers. There, one does not hear English spoken. On the first floors, the bookkeepers, clerks, messengers boys, foremen, managers, are all American. Farther up, the molders, workers in the materials of the pottery are also American. But on the top floor, where the creative artists are at work—the designers and modelers and sculptors—there one hears again the foreign tongue and English only with an accent.

In the country districts, one finds the farm laborer and very often landed proprietor a man of foreign birth. As a proprietor, he is not always making a success of it, for he does not know American farm methods, land is too expensive to be worked in small acreage and machinery can not be purchased by the man of limited capital. Even the extreme frugality to which he is accustomed will not bring him through a bad crop season which leaves no earnings and many debts at the end of the year. The lot of the farm laborer is not altogether to be envied, either. In many cases, the short season does not afford sufficient work in one place to support a family throughout the year, and it is necessary to follow the crops up and down the state in order to find anything like steady employment. The same family may pick cotton in Imperial Valley, thin beets in San Bernardino County, harvest raisins in Fresno County and pick hops in Yuba County. Covering over a thousand miles a year in search of a living affords little leisure for education. It is this group, variously estimated from 15,000 to 40,000 families, which the public school scarcely reaches at all. Whatever effort this department has made has been expended in cooperating with the state supervisor of attendance in organizing the migratory school to provide for the children. For the adults it has seemed almost hopeless.

Other industries than agriculture in the less congested parts of the state call for the foreign-born worker—the mines and quarries in Amador, Calaveras and Mariposa counties, the fishing in San Francisco, Monterey and San Pedro bays, the lumbering and saw mills in Lassen, Mendocino, Humboldt and Siskiyou counties, the cement works in San Bernardino County, the sugar refinery at Crockett, the smelters at Selby and elsewhere in Contra Costa County. The railroads with their yards, construction work and section workers bring in the Mexican laborer and the Irish foreman—one of the amusing instances of the human diversity covered by the term "foreign-born." And always in California one finds the big construction work by which a new state

prepares for a greater and greater population. The new Edison dam above Lake Huntington, where 1500 to 5000 men are employed, uses a large proportion of foreign-born workers.

The following table gives the ten counties with the largest number of foreign adults, with the nationalities predominating:

	Foreign adults	
Los Angeles	161,787	Mexican, Canadian, English, German, Russian
San Francisco	141,124	Italian, German, Irish, English, French
Alameda	73,842	Portuguese, German, Italian, English, Irish
Fresno	28,102	Russian, Armenian, Mexican, Italian, Swedish
Santa Clara	21,949	Italian, Portuguese, German, English, Canadian
Sacramento	19,365	Italian, English, German, Canadian, Irish
San Diego	19,185	Mexican, English, Canadian, German, Swedish
San Joaquin	18,364	Italian, German, Mexican, Canadian, Russian
Contra Costa	14,583	Italian, Portuguese, Irish, English, Mexican
San Bernardino	12,565	Mexican, Canadian, English, German, Swedish

Establishing a State Department of Immigrant Education.

In January, 1920, California established a Department of Adult Education in the State Department of Education, and an Assistant State Superintendent of Public Instruction was employed to take charge of this work. However, this was not the beginning of immigrant education in the state. The Commission of Immigration and Housing, established by the legislature of 1913, had given serious consideration to the education of the foreign adult. The commission had made surveys of a number of cities where classes in English were held and reported on the unsatisfactory character of the teaching. Through their departments of camp inspection and the information bureau and complaint offices in San Francisco, Sacramento, Fresno and Los Angeles, they had gathered statistics showing the need for more American contacts and educational opportunity on the part of the foreigner. Most important of all, the commission prepared and was responsible for the Home Teacher bill, a law which made possible one home teacher in every school where there were 500 or more children; the duties of this teacher being confined to instruction and assistance of the foreign-born mother, who is the most neglected of all the members of the foreign community. The commission also printed and distributed the first set of lessons for use in these mothers' classes, and gave every possible encouragement to their author, Mrs. Amanda Mathews Chase, who made the home teacher a reality by giving over a year without salary to show the value of this new kind of school teacher. More will be said in another place of the development of the work of the home teacher.

When the State Superintendent of Public Instruction recognized the importance of giving official recognition to immigrant education, he was without funds, and the Commission of Immigration and Housing transferred to him a sufficient part of its budget to set up the new department and pay a salary to the new assistant state superintendent. The superintendent took over to this new post from the Commission of Immigration and Housing the Director of Immigration Education, who had been carrying on the propaganda and investigation in this field for a year and a half.

Before the year was out, it was evident that there was a distinct advantage in working inside the school system. The fact that a program

is official gives it sanction which it never has otherwise. Although there was not more real authority nor new legislation, the administrators in the schools gave a more sympathetic ear to the appeal to make provision in the budget for night schools. That the State Superintendent of Public Instruction was taking an aggressive attitude on the question changed the situation instantly. Throughout, the interest and leadership of the state superintendent has been an important factor in the growth of the work.

This does not mean that the lethargy, indifference and even prejudice of communities and school boards were easily overcome, or that this work was given any place comparable to that occupied by the education of children. In fact, the reaction from the war and the stir it had made for Americanization had already set in, and the old slogans "Why should we spend money on the foreigners who do not pay taxes?" or "If we spend it for night schools we are depriving our children," were invoked by the native-born American, whose training for citizenship had not taught him that the only safeguard for democracy is an educated adult population, that everyone pays taxes, whether he owns a house or rents a tenement, and that a new educational demand does not require abandoning old responsibilities equally important. A world that had been organizing itself to make sacrifices for war was resentful at the necessity of making sacrifices for peace.

Improving the Teaching Method.

In 1920 there were already many cities in the state offering classes in English and citizenship. One city, Los Angeles, on the advice of the Commission of Immigration and Housing, had employed a trained director for this work, who carried on teacher-training courses at the university in order to give the teachers on her staff some knowledge of the technique of teaching English as a modern language. Other cities, like San Jose and San Francisco, had had citizenship, or English classes for many years, but with a few rare exceptions practically all were taught by untrained teachers whose instruction of adults was patterned after the instruction of children, with little or no concession to the maturity or previous education of the students.

The first six months, therefore, were devoted to making plans for better teaching. In fact, all the work of the department falls into the two divisions of improving the method and extending the field. In improving the method, the first task was to see that teachers could get practical help. During 1920 the Commission of Immigration and Housing was devoting its attention to community organization as the best way to bring about the assimilation of the foreign-born. In the promotion of this task the Commission had the cooperation of the extension division of the University of California. As the schools are the natural center for any community organization, four training courses for teachers were given at Los Angeles, Fresno, Oakland and San Francisco, which at once interpreted the background of the foreigner and suggested a plan for his orientation in American life. Although teachers were in the majority, these extension courses were well attended by social workers, club women, business men and other representaives of the native-born. They served admirably to create a new attitude toward the whole problem and to weld together all the forces working for the amelioration of the difficult conditions which surround the newcomer.

An elementary teacher who successfully completed all the work of one of these institutes was granted a special credential for teaching foreign adults by the State Board of Education.

This was the beginning of a requirement of systematic training which, as years went on, took more definite shape. In the beginning most of the classes in the cities were conducted on the elementary basis, thus emphasizing the childish character of the work. With the enactment of necessary legislation and on the insistence of the assistant state superintendent in charge, practically every class in the state has been changed over and is administered as secondary education.

This was not easy of accomplishment, for in the larger cities it required a revolution in bookkeeping and other administrative arrangements. Superintendents had to spend many hours with the assistant state superintendent, rearranging schedules and working over probable financial and professional gains, before they could make the necessary adjustments. This was done, not because there is any closer relation between the work of the night school and the high school than between the work of the grades and the high school. Adult education is as separate and distinct as elementary education. Experience showed that it is more easily financed in this way, more economically administered and can demand better equipped teachers, especially prepared for this particular undertaking. At present, no one may teach the foreign adult who has not had at least two years' training beyong the high school and four years' teaching experience, in addition to six semester hours in especially designated courses. These courses cover a thorough study of methods of teaching English, with a review of the whole field of modern language instruction and the careful preparation of practical lessons for use in the classes. In every case, demonstration and cadet teaching supplement the lecture. In addition to teaching methods, these courses deal with the social and anthropological side of the immigration question—a study of migration and assimilation as a world-old problem and the specific causes and results of the enormous migrations to the American continent and the United States in particular.

For the sake of bringing to the teacher a more critical attitude and greater familiarity with America, a course in American political institutions is recommended. This deals with as many controversial questions in American life as can be discussed, and prepares the teacher in turn to deal with the questions asked and unasked which come to the mind of any stranger who has not our emotional bias in favor of the traditions of our own country. It seems logical that one who is to induct the foreigner into America and teach him English should understand English, the immigrant and America. And the force of that logic soon became apparent to the superintendents and principals, for the trained teacher held her classes and the untrained lost them after a few weeks. Adult education presents the acid test of our effectiveness, for there are no compulsory attendance officers to hold our students to the school.

Teacher-Training Courses.

The greatest help in teacher-training came from the cooperation of the universities. The private institutions have been of inestimable value and the state university in particular has rendered unique service.

The first community organization institutes were followed up during the summer by sessions at both Berkeley and Los Angeles, and from that time special courses, designated by the assistant state superintendent, have been offered at all the summer sessions. The assistant state superintendent has been invited to give courses whenever possible and for three summers accepted, in order to organize the method material and get in close touch with the teachers from all over the state. Over four hundred teachers were met in these three summer sessions.

The greatest contribution, however, has come from the extension division of the state university. During the spring of 1921, the assistant state superintendent held numerous conferences with a committee appointed by the president of the university to develop a method by which the university could cooperate with the schools for Americanization work. In the fall of 1922 the extension division employed an expert in immigrant education to give training courses to teachers who were already engaged in teaching foreign adults, wherever enough could be gathered together to warrant such a course. During the preceding year, the assistant state superintendent had held short institutes for all the teachers of foreign adults in the state, meeting in San Diego, Los Angeles, Tulare, Hanford, Fresno, Stockton, Sacramento and San Francisco. Some of these institutes lasted for two weeks and the response was so general, and demands for a repetition of this plan so numerous, that it was decided to establish a less haphazard arrangement following the same general plan. Miss Ethel Swain, whom the university chose for this position, has been giving courses for two years and is again engaged for 1924–25. Her classes have been held in San Francisco, San Jose, Mountain View, Stockton, Madera, Fresno, Kerman, Reedley, Hanford, Tulare, Bakersfield, Los Angeles, Long Beach, San Pedro, Santa Ana, Fullerton and Santa Barbara. The particular advantage of this plan comes from helping the teacher while she is at work. Every difficulty can be brought to the course for discussion. Miss Swain can visit the schools and use all the classes for demonstration and helpful criticism. The university can not be sufficiently commended for this splendid service which it has rendered to the public schools of the state.

That results are measurable here will be shown from the fact that whereas in 1919–20 only a small handful of teachers in Los Angeles had had any training for this work, in 1923–24 out of 895 classes maintained throughout the state, 85 per cent had trained teachers, and since 1920, including state and private universities as well as the teachers colleges at San Jose and San Francisco, extension summer sessions, upwards of 3000 teachers have taken the required training courses. More than half of these were already holding positions which they wanted to fill more efficiently.

Teachers' Organizations.

The most satisfactory part of the work of state supervision comes from the contact with the teachers. By far the larger number have chosen this teaching because of their keen interest in it, rather than for the remuneration it brings. They are prodigal of their time and effort, and ever ready to join a conference to discover new and better ways. For this reason, teachers' organizations in this department

have been particularly successful. The Alameda County organization was started soon after the assistant superintendent began work. Los Angeles city had organized without assistance and included all evening school teachers; later the San Joaquin Valley and southern California, and Santa Clara County, were organized. These groups hold most instructive meetings in their own localities and keep up an esprit de corps and a more or less continuous discussion of the best that has been formulated by experts all over the United States. Growing out of the summer session at San Jose and now carried on by these section organizations is the publication of a most valuable magazine—the Community Exchange Bulletin. Each section organization edits the bulletin once each year, so that all parts of the state know of the successful experiments elsewhere, the teachers in a given section are greatly stimulated by working together and much of the feeling of isolation which all experienced in the old days has been eliminated.

Organization and Expansion of Immigrant Education in Cities.

The training of teachers and the extension of work to new centers of activity had to go on side by side. For the first year much time was spent in the cities meeting with superintendents and boards of education, urging them to recognize the importance of adult education, and in planning adequate budgets to support the work. It had been the custom in the cities for the most part to carry on these classes in the evening high schools where the other night classes were held, such as the vocational and regular high school work for the native-born. The state department believed that this would reach only those foreign people who had already made a large number of American contacts and were no longer timid about going into new places. For those people who lived in foreign neighborhoods such a program would not serve. Boards of education were therefore urged to open classes in foreign communities. If no school building was conveniently available, the classes were put in stores or any other place that the board could rent.

Adult education demands the greatest flexibility in school administration. Former Los Angeles city superintendent, Dr. Shiels, was once heard to say that the poorest place to hold a night school was in a school, and the poorest time to hold it was at night. The idea that a class for foreign adults should be held in any place, and at any time that the people would attend it, was given wide circulation throughout the state. It was also apparent that the night high school principal who is engaging teachers to do all varieties of night school work is not always the best judge of a good Americanization teacher, nor is it satisfactory to leave the decision as to the setting up of classes for this work to a superintendent of schools who has too many administrative duties to undertake the special kind of organization. School boards were therefore urged to appoint directors of Americanization, whose duty it should be to discover just those neighborhoods within a city where the largest attendance could be counted upon and to find just the right teacher to deal with the particular foreign group. A very good teacher may be unsuccessful in teaching Mexicans because her temperament fits her to deal with Armenians or Japanese or North

Europeans. Without this kind of administrative direction a class is started in one school and continues year after year, although a large part of the foreign population may have moved to a new neghborhood. The director's salary is more than covered by the economy effected in efficient supervision.

Los Angeles city has developed the best administrative program of any city in the state. As the first to have a director of immigrant education, it later added a specialist in teacher-training who had unusual skill in the preparation of lesson material. This assistant in the department keeps in constant touch with all of the classes and knows precisely the kind of lessons that will be suitable for the needs of the individual students. She prepares and sends out to the teachers these lessons, which obviously have a timeliness and a local application that could not be found in any text book. Text material in the Los Angeles city schools is otherwise well cared for through the Los Angeles school library, where a librarian is especially assigned to the distribution of books for these classes. In this way it is possible to have the widest variety of texts. A class may use one or two sets of textbooks for a few weeks and return them to the library and get fresh material. In addition to the texts and lesson leaflets which are distributed, the librarian makes a collection of pictures, charts and other graphic supplements to the lessons, as well as patterns and drills and sample materials for the women's classes.

Since the director of immigrant education does no teaching and has no other duties outside the department, she is able to make the work of every teacher as effective as possible. In this particular instance, the director, Miss Flora D. Smith, an executive of marked ability with a rare vision, has the advantage of having had all of her experience and training qualify her especially for this type of work. She has the confidence of her staff because of their assurance that she can do all of the work herself. Where the director has other duties, such as acting as the principal of the evening high school or supervising part-time work, there is bound to be some loss of efficiency and such a high degree of precision is not possible.

There are 33 cities in California large enough to have city superintendents in charge of the entire system, elementary and secondary. In all of these cities there is some foreign population. In 1920–21, after one year of state supervision, 22 of these cities offered classes for foreign adults; in 1921–22, 28; in 1922–23 there were 25, and in 1923–24 there are again 28. The cities which do not offer classes are: Vallejo, San Luis Obispo, Oroville and Grass Valley. (For the completed list, see the statistics appended.)

The number of classes offered has shown a steady increase. By the end of the school year of 1921, there were 269 classes in city districts. In 1922, 402. This number dropped in 1923 to 398 and has increased in 1924 to 591. The increase in enrollment has been even greater than the increase in number of classes. By the end of 1921, there were 9088 people enrolled in these classes; in 1922, 14,741; in 1923, 21,162; in 1924, 30,566. In the year 1922–23 there was spent in the cities and high schools of California for immigrant education $288,759.15; in 1923–24 there was spent $374,632. The increased efficiency is shown

by the fact that the cities handled an increase of 48 per cent in the enrollment in 1923–24.

Organization and Expansion of Immigrant Education in the High School Districts.

Since the first year, the state department has directed its efforts most vigorously toward the organization of classes in the country districts. Before 1920, practically none of the high schools outside the city systems were offering classes in English or citizenship. There were a few straggling classes held in union high school buildings attended by more progressive foreign adults who lived near enough to the high school to make attendance possible. The legislation of 1919 providing maintenance for evening high school classes gave great encouragement to all adult education. By the end of the school year 1920–21, 35 high schools were offering classes; in 1922, 52; in 1923, 72; in 1924, 76. The organization of the high school work has been the most satisfactory attempt at rural adult education in this country. Whereas, in the beginning, all of these classes were held in the high school building, it was soon discovered that the foreign colonies are usually far from the center of the high school district where the high school building is to be found. Union high schools usually include in their districts from five to tweny-five elementary school districts. The elementary school is familiar to the foreigner and not so imposing as to discourage his attendance. The little country school could not support a night school, but the union high school is justified in setting up classes out in the country wherever at least fifteen people can be enrolled. This makes it possible for the high school to employ a full-time director of adult education. This director gets in touch with each elementary school in the high school union. He visits the homes of the children where English is not spoken, searches out the leader of the foreign colony and organizes classes at a time and place satisfactory to the foreign people.

As it is usually necessary to employ the country school teacher to carry on these classes, the director must prepare the lesson material and give the teacher the necessary training and supervision to make her work a success. By keeping in close touch with all the leaders amongst the foreigners themselves, the director is able to discover whether or not the instruction given is practical and suitable. These directors of immigrant education in the union high schools have become the guides and leaders of the foreign colonies. They come to know every foreign family throughout the entire countryside. As they drive about the country roads, they are continually stopped and asked questions and presented with the most personal and difficult problems. In some districts, as in Tulare, the director, in addition to his adult education duties, has been most valuable in cementing a friendly relation between the elementary and the high schools and in insuring a 100 per cent enrollment from the eighth grades of the grammar schools into the high school.

The most hopeful aspects of the Americanization work are developed in these rural communities. The intimate understanding of the foreigner which the trained director in the high school is able to acquire makes it possible for him to organize around the school much of the

social life of the community. The foreigner makes his contribution to this social life as he does nowhere else in America. The school is more grown-up in its manner than it can become in the city because it bears none of the day school traditions. It sometimes happens that a country school has a larger attendance at night than it has in the daytime. The moving picture machine and other necessary equipment is bought by the students. The school house is their club and general meeting place, and in the midst of the freedom and ease of association English is readily taught. One by one each nationality has been conquered by this method. In the beginning it was said that only the most ambitious groups could be reached in the rural districts. The long hours of work for the farmer would make it impossible for him to attend school. It was a familiar report from the board of high school trustees or high school principal, "We have Portuguese dairymen in this district, so it is no use opening a night school." However, after successive night schools were opened and attended almost wholly by Portuguese dairymen, the practical answer was given to the theory that no one will attend school in the evening who has to get up at three in the morning and begin milking cows. Somehow the dairymen found a way, when the social activities were made sufficiently engaging and the English sufficiently practical.

There is no more difficult nor important task than continuing to urge high school boards and principals to undertake this rural adult education. There are still 69 high school districts where classes should be offered. It is, however, time-consuming for the assistant state superintendent. It is usually necessary to meet three or four times with the high school principal and two or three times with the board of trustees before anyone is convinced that an experiment can be made and a trained director engaged, and even after a most successful year with a skilled teacher in charge the cry of economy in the district may frighten the board into abandoning the work.

The figure for the year 1924 which shows little increase over 1923 does not mean that no new schools have been started. It does mean that 18 districts were inoculated with the general panic and closed their classes. It is encouraging that even in so trying a year there were 22 others to open and take the places of the more timid. For the most part, however, these high schools which had undertaken work not only rejected every idea of retrenchment, but have tremendously expanded. In 1921 there were 77 classes in rural districts; in 1922, 140; in 1923, 234; in 1924, 304. The enrollment reflects the steady improvement in teaching. In 1921, 1380 were enrolled; in 1922, 3554; in 1923, 6301; in 1924, 9342—or an increase of 48.1 per cent over the previous year.

In order to urge city boards of education and high school boards of trustees to consider the importance of the adult immigrant education, the assistant state superintendent has visited 114 high schools and 33 cities, making an average of 8 visits per city and 4⅓ per high school during the four and a half years since the establishment of the office. The increase in enrollment during that period in the cities has been 224 per cent, and in the high schools 530 per cent, making a total increase of from about ten to forty thousand, or 400 per cent, since the work started.

Legislation.

The legislation for immigrant education in California has made much of the increase possible. The first law to be initiated, the Home Teacher Act, was passed in 1915, as mentioned above, at the instigation of the State Commission of Immigration and Housing. The next law passed in 1919, section 2 of the second section of the part-time act, made it compulsory for high school boards to supply classes wherever twenty or more men and women between the ages of 18 and 21, unable to speak, read or write the English language with the proficiency of the sixth grade, could be found within a radius of three miles of the high school building. This law also made it compulsory for such persons to attend these classes when established by the high school. No effort has been made to emphasize the compulsory features of this law, but the high school boards have been more conscious of their duty because of this legislation.

A law similar in wording which deals with the adult over 21 was passed in the 1923 legislature. This requires high school boards to offer classes to adults who can not speak, read and write the English language with the proficiency of the sixth grade wherever twenty persons apply for such classes.

The naturalization law passed at the 1921 legislature, requiring school boards to offer classes wherever twenty-five or more applicants for the first or second papers asked for such classes, rounds out all the legislation necessary to carry on adult immigrant education. The law which provides for the financing of these classes is particularly well planned. It provides (see pages 284 and 289, Sec. 1760, California School Law, 1921 edition) for a bonus of $80 from the state and $40 from the county per unit on the first ten units of attendance in night school classes, and $60 from the state and $30 from the county on the second ten units of attendance, and $40 from the state and $20 from the county on the third ten units of attendance, making a total of $2,700 a year bonus on the first thirty units of attendance. This is sufficient to pay the salary of the director and insure the district of enough state and county money to pay more than two-thirds and in most cases all of the cost of maintaining such classes.

The law passed in 1923 requiring districts to spend as much money on the maintenance of classes in any school year as was earned in the attendance in the preceding year gives a new hope of permanency to the adult education program.

Just as the class room methods and administration were at first modeled on the elementary and secondary education, so has the legislation followed in the footsteps of other school legislation, rather than making a clean break between the day school for children and the adult classes. At the meeting of the high school principals in the spring of 1923, the assistant state superintendent had a special committee appointed to study all of the legislation which affects adult education and to prepare for some future legislature a law written with the distinctions of adult education well in mind, and creating a separate school department for this work. Such studies are now being made and a report from this committee will be handed in before the 1925 legislature to the superintendent of public instruction and the commissioner of secondary education. Whether it will be deemed wise to

enact legislation at this time is as yet uncertain. The research will be valuable, however, for future action.

It is to the generous financial support from state and county funds and the use of full-time teachers, that California owes her success in immigrant education. These full-time teachers can be specialists, giving all of their thought to the adult aspects of education rather than devoting only a few hours to this work after a full day spent with children. It is, of course, necessary to use many teachers who belong to the latter group, but so long as there is direction and supervision from specialists a high standard can be maintained. In 1920, when the state department was inaugurated, there were very few such full-time teachers; in 1924 there were 134.

Home Teacher.

The home teacher has probably been California's most outstanding contribution to immigrant education in the United States. By this means, the public schools gave their first recognition to the importance of the home as an educational agency. Visiting teachers, adjustment teachers and other public school officials concerned with the adjustment of the child are found in other states, but California was the first state to recognize the mother as the important factor in the home education and to give her public school service, whether her child had shown any maladjustments or not. It is not because the child is undernourished or tardy or absent or dull or sleepy that the home teacher visits the foreign mother. It is because she is a foreign mother. If her child is doing well in school, so much the better. It is still important that she learn English, have contact with American life and create for the child a home which will not be in conflict with his American education.

As has been said earlier, the home teacher bill was sponsored by the commission of immigration and housing and passed the legislature of 1915. It permits one home teacher for every 500 children in average daily attendance in the public school, and its particular purpose was for home work among the foreign parents. No school district had the temerity to undertake the employment of such teachers for the year 1915-16. In Los Angeles, however, Mrs. Amanda M. Chase gave her services for that year and part of the next in order to show the value of this kind of teaching. It was soon discovered that the home teacher formed a perfect link between the school and the foreign neighborhood. She interpreted the school to the foreign community and the foreign community to the school. All morning long she traveled back to the home of the children in attendance at the school and made friends with the mothers. The ultimate aim of all her contacts was the organization of classes where the mother would learn whatever she needed to know to make her a more effective head of her American household. Sewing classes usually made the first appeal, but a sewing class can soon become an English class.

In the second year both Oakland and Los Angeles were convinced, and employed home teachers. So long as there was not state direction in the department of education, there was some confusion as to the function and work of the home teacher, and an increasing tendency developed to use this person, who seemed the one free agent in the school, for whatever emergency might arise. The assistant state

superintendent, therefore, held a series of conferences with the home teachers, school principals and superintendents, to point out that, although the home teacher did not have the same categorical duties, her work was nevertheless as much defined as that of the fourth grade or kindergarten teacher and it was only by concentrating upon the field of her own work that she could produce results. If she were deflected to attendance problems or other difficulties which arose in the course of the regular school day, she would be doing the work of the principal or the grade teacher and neglecting her own assignments. This idea has now taken firm root. The home teacher does as much visiting in the home as she ever did, but it is all with a definite aim of reaching the largest number of foreign mothers in the community with an education to fit them for American life.

In the city districts the home teacher usually holds classes in the afternoon in the school building. In the morning she visits and holds smaller classes in the home for women who are too shy or too encumbered to go to school. Los Angeles has the largest number of these teachers who are working with the foreign mothers, reporting 49 for the year 1923-24. They work in the neighborhood of the foreign schools, in railroad camps, in congested foreign communities, in model cottages bought by the school in order to demonstrate the best American standards of living under difficult conditions, and they teach on the sidewalk and in the alley as they are making their rounds of the neighborhood, continually answering questions, giving information, straightening out difficulties and serving always as the doorway by which the foreign family may find the agency which it needs at the moment.

During the year 1923-24, San Francisco has made great strides in this field. For many years this city has doubted the efficacy of this type of work. During the past year, however, a program of expansion has been undertaken which has been more than justified by the results. Under the new director of adult education four new home teachers were employed. Care was taken to find well trained women and even in the first year in new fields they were able to show an attendance of more than twenty women a day in each of their classes. What this means to the future citizenship of the native-born children of foreign parents in San Francisco can not be measured.

Oakland, one of the first cities to undertake home teacher work, has not been able to expand with the rapidity of its first hopes. It has, however, furnished expert teachers to other cities in the state where the work was being inaugurated, and is probably responsible for expansion in new places which financial pressure made impossible in Oakland.

Outside the city systems, home teachers, as such, have not been generally employed. The directors of adult education, however, who are giving all of their time to organizing classes for foreign adults under the union high schools usually teach a few mothers' classes in the various elementary school districts in which they are organizing night schools. This gives the school a splendid contact with the foreign home and insures the night school's success.

Education of the non-English Speaking Child.

Just as it was difficult to define the work of the home teacher and keep the emphasis entirely on the adult aspects of her work, so it has never been possible to limit the work of the state department of immigrant education to the adult field. In surveying the state to discover just where the foreign populations live and to advise school boards and high school principals as to the extent and variety of their work, the assistant state superintendent in charge of immigrant education visited the elementary schools in order to learn the number of children who had come from foreign homes. This brought the alarming information that many children were entering our public school system with no ability to speak English; and because the teacher had had little or no preparation in dealing with these children they were rapidly becoming a retardation problem and sitting through the same grade two or three years without acquiring enough of the English language to keep up with the other children. It seemed absurd that a state should be concerning itself with teaching English to adults when the children of those adults in the elementary day schools were not learning English. Studies were made of the advanced grammar school grades and early high school, which brought most convincing figures to show that the foreign child was a laggard in many cases in those subjects which required a wide knowledge of language, and superior in those subjects where language was no handicap. The fact was also revealed that the foreign child dropped out of school at the end of the compulsory attendance age without having made a sufficient number of grades to insure him the education which should be necessary to cope with American conditions.

A less obvious but equally important fact was brought out by these visits to the elementary schools. The mingling of various nationalities, instead of producing a tolerance and understanding and sympathy between unlike peoples, was producing antagonism. The apparent ease with which the English speaking child, forced to make no adaptations, progressed through the schools, and the natural intolerance always displayed by the majority for any unlikeness in the minority, gave to the foreign child a handicap which created more of a barrier than the language. The teacher herself, usually with rather a provincial experience, did not understand how to use the traditions of the Italian, the French, Spanish and Oriental children as a way for enlarging the horizons of her American children and creating an international understanding which might be America's great contribution to world civilization.

At the very beginning, therefore, during the winter of 1920, a conference of representatives of normal schools was called to discuss this problem. Each normal school president sent his representative, and plans for the following year were formulated. Among the best of those plans was an institute to be held by each of the normal schools for its own constituency, in which the normal school faculty would lecture and hold demonstration classes for the teachers in the vicinity who could attend the institute, in order to make them conscious of this rather startling problem. With the cooperation of the assistant state superintendent, the normal schools carried out this program with remarkable enthusiasm. Institutes were held in Sacramento, Fresno,

San Jose and Santa Barbara. Classes of foreign children were taught for the observation of many hundreds of teachers. A discussion of the background of these children and the traditions and culture which they brought and the social significance of a class of mixed nationalities, give the teachers a new point of view about their foreign children, who often up to this time had been considered distinct liabilities.

The assistant state superintendent participated in all of these institutes and offered to do demonstration work in the classrooms of the teachers in attendance. Realizing that with all the other administrative duties only the most haphazard results could be obtained by the assistant state superintendent, an appeal was made to the Commission of Immigration and Housing to assist once more in the educational field and undertake an experiment in the education of the foreign child. To this end Mrs. Grace Stanley was engaged and ten schools throughout southern California were chosen as centers for experimentation. The superintendents and principals agreed to abandon the usual course of study and to give Mrs. Stanley complete freedom in directing the work of the teacher. Monthly conferences were held and material sent out. The school at Cucamonga was chosen as the center for experimentation and methods tried there were recommended in other places.

Before the experiment was completed, Mrs. Stanley became the commissioner of elementary schools and has therefore carried over into her supervision of all the elementary schools in the state the experience which she gained in this special study of one group of foreign children. As a result, it has seemed unnecessary for the assistant state superintendent to further concern herself in the field of elementary education, except with regard to teacher-training for this work. To this end there are three centers of teacher-training with special emphasis on the foreign child in the elementary school. The teachers college at San Jose is developing training for the rural school in the foreign community. Two rural schools are used for the cadet teaching—one at Milpitas and another at Centerville. Here the cadet teacher has an opportunity to discover the way in which the rural school may become the center which is the dominant factor for Americanization in the country.

Although teaching of the child is the first aim, the student teacher soon discovers that you can not teach the child except as a part of his home and environment. She is therefore led out into the community and is forced to bring the parents into the school for active participation in the life of the school. Cleaning up the school grounds, studying better methods of school sanitation, providing hot lunch, helping the parents to become naturalized American citizens—all are included in the technique of elementary teaching for a rural school.

At Fresno one member of the faculty has specialized on the best methods of speaking and reading to foreign children, and by combining supervision of reading in the city schools with her lecture work in the college is able to give demonstration and practice along with theory. It is hoped that this can be expanded to extension work throughout the county and that ultimately no teacher shall be graduated from this institution who has not had thorough training in dealing with the foreign child.

A Model Neighborhood School for Immigrant Education.

An experiment which is more far-reaching in its possibilities than any which has yet been undertaken is the program of the state teachers college in San Francisco. Through the interest of the directors of a settlement in the community, a piece of property was donated to the state to be used as a demonstration center for the best educational methods for a foreign neighborhood. This property, known as the People's Place, in the heart of the Italian community should eventually become a model for all public schools so located. For three years the state has maintained here a kindergarten taught by student teachers from the college. In addition, afternoon classes for mothers and evening classes have been held. A member of the faculty of the teachers college lives on the grounds and has become thoroughly familiar with the life and personnel of the foreign community which surrounds her on every side. Extension training has been given which is quickly reflected in the superior work done by the teachers of adults in the San Francisco city schools, but adult education is not the primary purpose of the use of the demonstration center.

The most important conception for the teacher of a foreign child to get is that she can not teach him apart from his traditions and environment. She can not make a good American out of him by cutting him off at the roots. Rather, she must undertake the most careful and tender transplanting. The teacher must know the child's mother, know her efforts and failures at adjustment in America, have appreciation and sympathy for her reverence for her European birthplace. She must know the social maladjustments in the foreign community in an American city, and recognize the long hours in which the child is being educated out of school in ways that will not contribute to his future citizenship.

For the year 1924–25, therefore, each of the teachers who receives her practice training in this demonstration center will have that work correlated in her courses in methods and in sociology. Field work and other neighborhood studies which will interpret her classroom experience will be assigned. She will help with the afternoon classes for women and with the evening school, not for their own sake but in order to understand better the children she is attempting to teach. Her history and geography will also be concerned with Italy and with comparisons between the life of the old world and the new. It is hoped that the training classes may be extended through the primary grades and that a community building may be built, largely financed by the Italians themselves, for carrying on educational work for the entire community. The city board of education has promised to assign teachers for the adult classes so that the teachers college may have no expense beyond the training of teachers for the elementary schools.

One sees teachers going out from this institution with a new attitude toward education and world citizenship. This is the only real hope for world peace. It must begin with an understanding, painstakingly worked out, which no longer decries everything that is different but finds in that ultimate civilization which man may work out a contribution from all the peoples of the earth.

Throughout the state the education of the foreign child is being given greater attention than heretofore through the appointment of super-

visors of immigrant education under the county superintendents of schools. These supervisors study the elementary schools in the rural districts where foreign children are in attendance, assist the principals to reorganize the classes, so that the foreign child may be given the greatest possible opportunity for practice in oral English, and in addition they stimulate the organization of classes for adults—so that the education of the foreign child and the parent may be carried on *pari passu*.

Citizenship and Classes Preparing for Naturalization.

The culmination of his educational experience comes when the foreign adult receives his American citizenship. Because we regard this as a purely subjective and spontaneous expression of his conscious adjustment, the state department for the first two years made practically no efforts to improve or direct the citizenship training. That most of it was bad and narrowly conceived did not seem a justification for an effort in this direction, since the real citizenship training came through outside contacts rather than through the school room. As the general school work adopted broader ideas and as the English teaching began to function effectively, however, the necessity for giving the foreigner an interpretation of political America became necessary. The classes which prepared for naturalization were doing this to some extent. However, the fact that the teacher was dominated by the knowledge that his success was to be rated by his pupils' ability to make precise answers to precise questions given by the Naturalization Examiner had a tendency to encourage cramming methods rather than the stimulating discussions suitable to an adult class in political science. The student himself, harassed by the terrors of the impending examination, was not in a happy frame of mind to think critically about political and social institutions.

Two plans to improve this condition have been adopted: First of all, in the training of the teacher for immigrant education, a course is now included in American political institutions. This course has been worked out by the assistant state superintendent and discussed with the members of the university faculties who are giving it. It is urged that these classes will not be informational but controversial. All of the problems of American life about which there is question are to be brought up for discussion. With this wider horizon the teacher will be less satisfied with a categorical question and answer class for his own teaching. The state department has provided an outline for the naturalization class, the introduction to which is quoted below, in order to show the point of view of this outline:

Outline of Course in Citizenship for the Use of Teachers in Naturalization Classes.

Note to Teacher:

The teaching of prospective American citizens preparing for their examinations affords an opportunity for the teacher to enlarge his own ideas of government and to give searching inquiry to his own prejudices and convictions.

No teacher can give genuine leadership in this field who is not studying himself and constantly modifying and adjusting his own opinions in the light of new facts and experiences. It is only the teacher who is himself a student who can teach others to study and think constructively. It is therefore urged that the teacher continue to read for the stimulation of his own thinking books not only of facts about government but of opinion and comment on present day American institutions.

Government is never finished; it is always "a becoming". To know only those forms and institutions which are successful is to fail to lend a hand for the future. The teacher must be as aware of the criticisms as of the perfections. To this end a short list of books for the teacher's reading is appended to this outline. These are chosen not because of the finality of their judgments, but for their possibilities for provoking disagreement and thought.

The following outline for a course in citizenship for naturalization classes is indicative of the kind of study which should be undertaken. The questions at the end of each section have been made as provocative as possible. Their purpose is to invoke discussion and lead to further study. Few could be given a categorical answer, for the answers to many of them are still matters of dispute. However, these are the questions which every American citizen should be attempting to answer for himself. If a class launches into argument, it will begin to need more information and greater understanding will come.

Citizenship is not an accumulation of knowledge; it is a way of life. It is not achieved by learning the constitution by heart, but by active participation in the life of America. The discussion of the topics indicated here will give a man or woman more power for that participation.

After a class has spent a season working on these problems, it will be ready to receive its diploma and to be passed through the courts to undertake the responsibilities of citizens.

During the year 1923–24, conferences were held with the teachers of citizenship and the federal naturalization examiners and an agreement reached whereby teachers would ultimately be relieved of the worry of examinations and the students free to devote all their attention to a study of citizenship which would give them greater power for participation in the life of the community. Important paragraphs of this agreement follow:

Program for State of California.

Education for Foreign-born Persons Who are Applicants for Citizenship in the United States of America.

Purpose: An understanding of the political and social factors which determine the life of a citizen in the American democracy. To learn how to live together in modern America.

Methods: Close cooperation between the schools, the bureau of naturalization and the courts.

Part 1. The Public School.

I. Attendants.
   (a) All applicants for first papers who can be induced to enter the classes.
   (b) All applicants for second papers except those who show exceptional knowledge of American institutions.

   NOTE.—Before a man is taken into the naturalization class he should have a thorough working knowledge of English.

II. Length of Attendance.
   Until the purpose has been obtained. Course of study to be determined later. Good teaching methods should discourage short term courses of three months as too much like cramming.

III. Organization.
   (a) Carefully graded classes of applicants, of not more than thirty and preferably not less than ten in average attendance in a class, to meet as near as is practicable to the homes of the students.
   (b) Direct continuity between the classes in English for non-English speaking and foreign-born and the class for citizenship. The course of study in the evening school classes for English should be directly linked with that of the naturalization class, and work done in the former should be accepted in the latter as direct preparation for citizenship.

Part 2. The Bureau of Naturalization.

I. Accreditation of all teachers who have (a) sent forty successful pupils for examination, or (b) taught for two years without the failure of one recommended pupil.

II. Discreditation of any teacher who has recommended three pupils who fail in any one school year. (Students may come for examination without the teacher's recommendation.)

III. Occasional visits by naturalization examiners to the classes of accredited teachers to see that the work stays up to standard.

IV. Granting of certificates of proficiency or diplomas to all students recommended by accredited teachers upon cursory examination.

V. Examination of all pupils recommended by teachers not yet accredited whether ready to go to court or not, and granting certificates of proficiency or diplomas to all who pass.

VI. Certificates of proficiency to be binding on all other federal examiners, to be accepted without further examination when or wherever presented.

VII. Due recognition by the Bureau of Naturalization that knowing the facts of the constitution alone is not sufficient evidence of a man's educational fitness for citizenship as a voting unit in democracy.

Methods of Teaching.

(1) Entirely discussion methods with the introduction of as many controversial and provocative questions as the teacher can formulate, with constructive emphasis.

(2) Class composed, not of teacher and class, but of one group of students searching for the best methods of forwarding the ideals of American democracy.

(3) Subjects for discussion: Everything which affects the welfare of the individual in civilized society—health, safety, transportation, finance, education, justice, etc., as well as questions of control.

The department of naturalization has promised the fullest cooperation with the state department of immigrant education.

Cooperation with Volunteer Organizations and the Community.

One of the most important activities of the state department in the field of immigrant education has been obtaining the support and cooperation of the American community for carrying on this work. However well educated the foreign-born may be, or however eager he may become to make his contribution to American life, unless the American himself shows some willingness to receive him, his education will be futile. The department has therefore been very happy in the remarkable cooperation which it has had with the California Federation of Women's Clubs, the League of Women Voters, parent-teacher associations, and in some communities with the business men's luncheon clubs. The Federation of Women's Clubs has held citizenship meetings all over the state, has furnished funds for initiating school work, has had the most elaborate exhibits of foreign arts and crafts, working side by side with the women of foreign nationalities in preparing for these exhibits. Best of all, it has continuously, year in and year out, educated its own membership in the duties of citizenship of the native-born.

During the coming year the state department is furnishing an outline for the study of American citizenship and political institutions in the clubs all over the state. At the request of the assistant superintendent, the clubs made a contribution which enabled the state department to employ Miss Ethel Swain to write the text of seven sets of lessons for

use in adult classes. These lessons are printed by the state superintendent and sold at cost. The following titles are now being distributed:

Lessons for Illiterates who speak English.
Oral Lessons for Beginners—Women's Classes.
Oral Lessons for Beginners—Rural Classes.
Lessons for Intermediates:
- Little Journeys.
- Biographies.
- Some Industries of California.
- California People and Some of Their Laws.

The League of Women Voters has given particular assistance to the new ventures in adult education which will be described later.

In giving a report of a five-year period it is impossible to enumerate the many activities which must be undertaken in order to accomplish anything in a state the size of California. The assistant state superintendent has given hundreds of talks before every sort of organization which could be interested in the subject, has made two trips throughout the east studying the best work done in all the centers of immigration in the United States, has served as vice president of the section on immigration education in the national education association and planned and directed the program of that association at its annual meeting in San Francisco. Pamphlets have been written and edited on the education of the foreign child, the education of the adult, and the work of the home teacher. Statistics have been collected annually from each city school system and high school district and graphs and charts made to show the progress of work and need for further effort. Sums of money have been raised from private subscriptions to carry on temporary experiments and continuous effort made to give to the work broader implications.

Enlarging the Meaning of Adult Education.

After all, the real service of leadership which a state department can render is in sweeping away the obvious definitions of the task and enlarging the vision of its possibilities. In the beginning the practical need of developing a technique for teaching the English language and devising a practical method for administering adult education was the first demand on the time of the assistant state superintendent. In the main, the problems incident to these first steps have been solved. For the past year, whatever freedom there was from the routine of expanding the work into new territory or giving encouragement and stimulation to work already undertaken, has been spent in an effort to give a new meaning to adult education and to remove from immigrant education the peculiarity which it has had, and to exploit it as a basis for an adult education movement which would involve the entire adult population. This can be done in two ways: Wherever immigrant education is carried on in such a way that the night school ceases to be a scholastic institution and takes on a social character, the foreign-born will begin to find expression for its own gifts and endowments. In the eyes of the native population he will be given a new dignity, and an understanding between two groups, naturally antagonistic, can be developed.

The state office has therefore urged, particularly in those country districts where there is a meager social life, that the night school take on a community character and permit as much direction as possible from the people who attend. Letters urging the directors of immigrant education to study the customs and life of the foreign colonies have been sent out, material prepared on these subjects for their use and suggestions of plays and pageants have been distributed from time to time. Most gratifying results could be reported if there were space.

It is not by chance that San Jose has enrolled the largest proportion of its foreign population in the night schools of any community of the state. San Jose has had a long night school history and has had an enviable reputation for the character of its citizenship work. A superintendent with an unusual social vision, who employed as the director of immigrant education a woman of wide European experience as well as much experience of social service in this country, has had much to do with giving San Jose her prominent position. In each of the five centers of work outside the high school, the foreign adults of the neighborhood feel a real responsibility for the conduct of the school. The leaders of the foreign societies all work in close cooperation with the director and from time to time express their spontaneous appreciation of the work of the schools through their own preparation of a celebration to which the school faculty and American community are invited.

Santa Ana has achieved the impossible in developing leadership and capacity for organization among Mexican population, and has created a mutual sympathy between the Mexicans and the native-born that is most unusual.

The neighborhood schools of Los Angeles, with their cottages for centers of Americanization work, the citizenship classes organized as veritable civic bodies, throughout the San Joaquin Valley, are all heartening examples of a new day in adult education.

Universal Adult Education.

The response made by the foreign population has proven to the assistant state superintendent in her four years and a half of service that much power for the future America is being lost if the adult education of the state is to be confined to the education of the foreign-born and to those members of the native-born who are illiterates or interested in increasing their earning capacity through some vocational class. Throughout the world in the last ten years a new attitude has been taken on the relation of the public schools to society. The work of education is not done with graduation from grammar school, or high school, or university. With the complexity of social and governmental organization, with the complete changes effected in daily living through a new discovery like the automobile or the radio, it is necessary that education—even formal education—continue throughout life.

Everywhere in Europe, and in some places in America, adults who have been denied educational advantages in their childhood, or whose education was not adequate for solving the social and economic questions which come before an adult, have sought for a new means of renewing their contact with all the best of man's thought since the beginning of civilization. In order to understand this new movement

and to bring to California an expression of it which is suitable to her genius, the assistant state superintendent made a trip to Europe to study adult education where it had been best developed. In the Workers' Education Association of England, the people's colleges of Belgium, the youth movement in Germany, and the Danish high schools, one finds hundreds of thousands of men and women, many of whom spend all their life working with their hands, giving their evening hours to serious study of literature, politics, economics and science. America, in her prosperity, has not yet felt the need for this kind of an adventure. There is no question, however, that some response would be made if opportunity were given.

During the year 1923–24 an effort has been made to lay the ground for such an enlarged educational program as would create within any adult capable of feeling the need a desire for more knowledge and a better understanding of life. Meetings have been held throughout the year with all the administrators of adult education in various parts of the state, in an attempt to discover the best type of organization for carrying on this work. Adults will never submit to education over which they have no control or to courses selected for them. It will therefore be necessary to use whatever organization there is already in the community to further this program.

The league of women voters has been particularly aggressive in studying the field and in creating an understanding of the importance of the effort. The American federation of labor has already been committed to a program of workers' education to be carried out in cooperation with the extension division of the university. The state department of education has held conferences with presidents or their representatives of all the universities and colleges throughout the state, in order to work out better methods of cooperation between the public schools and the institutions of high education.

During the summer of 1924, the assistant state superintendent has held a class for the purpose of training teachers who could undertake this more advanced field of adult education, and during the winter of 1924–25 the assistant superintendent will cooperate with the cities of Los Angeles, Fresno and San Francisco in carrying on important experiments in this field. In San Francisco, two of the larger public schools will be used as demonstration centers and a course of study developed for adults which will make a clean break with everything which has been formulated in the public schools for children. A new approach to subject matter which is commensurate with the purposes of the adults in the class will give freshness to old material. In Los Angeles, special classes will be organized for various nationalities that have expressed a desire for higher education, and other classes will be held for the young women in the needlework industry who have already expressed their wish for a better understanding of their own future as industrial workers. In all of this, there is only a new application of an old idea. It was Plato who said that the best of education should be given to the rulers of the republic after they were thirty. In the American democracy, where all men are rulers of the republic, the process of education must be continuous and lifelong, and the public school must not be satisfied until it has given to all the men and women in its vicinity a sense of their obligations to be

untiring in their efforts to increase their own knowledge and consequently their own usefulness as citizens.

Respectfully,

ETHEL RICHARDSON,
Assistant Superintendent of Public Instruction,
in charge of Adult Education.

TABLE No. 1.

Growth and Development of Adult Immigrant Education in California 1920-1924.

	1920-21	1921-22	Per cent of increase	1922-23	Per cent of increase	1923-24	Per cent of increase
1. Number cities offering classes	22	28	8	25	.....	27	4
2. Number high schools offering classes	35	52	48	72	48	76	5
3. Total number classes in cities	269	402	49	398	.....	591	48
4. Total number classes in high school districts	77	140	82	234	42	304	30
5. Total enrollment in city classes	9,088	14,741	62	21,162	30	30,566	44
6. Total enrollment in high school districts	1,380	3,554	157	6,301	46	9,342	53
7. Total enrollment for state	10,468	18,295	74	27,463	34	39,908	45
8. Total cost	No re	cord	.....	$288,759.15	.....	$374,632.00	.....

TABLE No. 2.

California Cities Doing Americanization Work.

Name of city	1922-23		1923-24	
	No. of classes	Enrollment	No. of classes	Enrollment
Alameda	16	295	17	331
Alhambra	0	0	2	14
Berkeley	5	315	7	350
Chico	0	0	2	17
Eureka	2	39	5	96
Fresno	20	589	17	820
Long Beach	26	600	20	325
Los Angeles	151	10,540	281	14,037
Modesto	10	147	11	165
Oakland	44	2,101	51	2,379
Pasadena	6	310	7	400
Petaluma	2	44	5	175
Pomona	6	80	4	169
Richmond	3	187	16	341
Riverside	5	142	3	138
Sacramento	9	250	6	No report
San Diego	17	698	15	843
San Francisco	22	3,130	68	7,500
San Jose	22	803	21	1,505
San Luis Obispo	1	25	0	0
San Rafael	2	74	3	80
Santa Ana	9	180	8	205
Santa Barbara	6	241	4	195
Santa Cruz	2	48	2	35
Santa Monica	5	220	4	313
Santa Rosa	2	38	2	82
Stockton	No report	No report	7	No report
Visalia	5	66	3	50
Totals	398	21,162	591	30,566

Number of cities reporting classes, 1922-23 25
Number of cities reporting classes, 1923-24 27

TABLE No. 3.

California High Schools Doing Americanization Work.

County	High School	1922-1923		1923-1924	
		No. of classes	Enrollment	No. of classes	Enrollment
Alameda	Livermore Union	3	80	2	44
Butte	Durham	0	0	1	4
Contra Costa	Alhambra	0	0	5	343
	John Swett	11	542	13	738
	Riverview	3	166	6	225
	San Ramon Valley	1	5	0	0
Fresno	Caruthers	2	32	2	35
	Central	2	51	2	20
	Clovis	3	40	4	165
	Coalinga	0	0	2	10
	Fowler	4	101	2	37
	Kerman	2	55	8	254
	Kingsburg Joint	2	63	2	32
	Laton Joint	2	28	0	0
	Parlier	3	60	4	47
	Reedley Joint	4	80	5	150
	Riverdale	1	199	No report	No report
	Selma	9	266	12	430
	Sanger	3	160	3	119
	Tranquillity	3	85	2	39
Humboldt	Arcata	2	20	2	40
	Ferndale	1	35	No report	No report
Imperial	Calexico	2	112	2	99
	Calipatria	3	73	2	92
	Central	0	0	10	300
Kern	Kern County	10	120	10	230
	Maricopa	3	5	1	No report
	Taft	1	29	1	15
Kings	Corcoran	2	24	3	42
	Hanford	12	330	11	379
	Lemoore	7	209	5	No report
Los Angeles	Bonita	4	150	2	192
	Burbank	0	0	1	22
	Citrus	8	296	7	191
	Covina	2	39	0	0
	Glendale	2	17	2	No report
	Huntington Park	0	0	2	77
	El Monte	1	84	3	91
	Monrovia	No report	No report	13	79
	Puente	1	9	1	8
	Redondo Beach	2	54	2	39
	Venice	1	36	0	0
	Whittier	1	10	No report	No report
Madera	Madera	9	220	7	165
Marin	Tamalpais	0	0	1	22
	Tomales Joint	1	22	3	42
Mendocino	Fort Bragg	2	8	0	0
Merced	Hilmer	1	24	0	0
	Merced	0	0	3	90
	West Side	5	55	3	39
Monterey	Gonzales	6	113	4	163
	King City	1	No report	0	0
	Monterey	2	33	5	263
	Salinas	0	0	6	56
Napa	Napa	1	17	1	21
Orange	Fullerton	8	412	14	460
	Orange	2	65	3	136
Placer	Lincoln	2	No report	2	75
	Roseville	1	37	No report	No report
San Benito	San Benito	2	100	0	0
San Bernardino	Colton	2	100	0	0
	Chaffey	3	3	5	200
	Needles	No report	No report	4	92
San Diego	Coronado	1	25	0	0
San Joaquin	Lodi	0	0	2	49
	West Side (Tracy)	0	0	1	15
San Luis Obispo	Paso Robles	1	21	1	4
San Mateo	San Mateo	5	217	No report	No report
	Sequoia	1	22	3	96
Santa Barbara	Lompoc	0	0	4	183
	Santa Maria	3	18	No report	No report
Santa Clara	Campbell	0	0	1	38
	Mountain View	1	12	6	45
	Palo Alto	7	90	7	250
	West Side	0	0	2	30

TABLE No. 3—Concluded.

California High Schools Doing Americanization Work.

County	High School	1922-1923		1923-1924	
		No. of classes	Enrollment	No. of classes	Enrollment
Santa Cruz	Watsonville	1	24	1	20
Siskiyou	Siskiyou	2	143	3	127
	Siskiyou (Weed)	2	72	3	121
Solano	Armijo	0	0	2	107
Sonoma	Analy	0	0	3	490
	Cloverdale	0	0	1	35
	Healdsburg	0	0	1	23
	Sonoma Valley	0	0	2	24
Stanislaus	Hughson	8	93	8	72
	Patterson	2	34	2	30
	Turlock	1	17	8	123
Tulare	Dinuba	2	42	No report	No report
	Porterville	3	63	2	29
	Tulare	11	210	9	128
Ventura	Fillmore	0	0	2	169
	Moorpark	1	20	0	0
	Santa Paula	3	196	10	650
	Ventura	7	93	3	61
Yuba	Marysville	1	15	1	11
	Totals	234	6,301	304	9,342

Total number of high schools reporting classes, 1922-23 72
Total number of high schools reporting classes, 1923-24 76
Twenty-two new high schools were added to the list, but eighteen high schools dropped the work.

TABLE No. 4.

Immigrant Education in California Cities, 1923–1924.

Cities arranged according to percentage of foreign-born population which has been enrolled in classes. San Jose leads, with 19.2 per cent.

Cost of Immigrant Education in California Cities.

Name of city.	Total foreign-born population	Total Enrollment	Per cent of foreign-born population	Expenditure for immigrant education
San Jose	7,820	1,505	19.2	$11,948.30
Modesto	985	165	16.7	2,600.00
Petaluma	1,221	176	14.4	1,320.00
Los Angeles	112,057	14,037	12.6	169,840.00
Santa Monica	2,646	313	11.8	970.00
Santa Ana	1,844	205	11.1	1,500.00
Pomona	1,539	169	11.0	1,303.25
Fresno	8,552	820	9.5	3,440.00
Richmond	3,602	341	9.4	3,093.00
Visalia	621	50	8.1	650.00
Salinas	713	56	7.8	.....
San Diego	13,295	843	6.3	4,536.00
San Rafael	1,332	80	6.0	990.00
Pasadena	6,785	400	5.9	3,500.00
Alameda	5,877	331	5.6	6,150.00
Santa Rosa	1,465	82	5.6	600.00
Oakland	45,162	2,379	5.3	13,050.00
San Francisco	140,200	7,500	5.3	45,000.00
Santa Barbara	3,864	195	5.0	4,100.00
Long Beach	6,799	325	4.7	4,250.00
Riverside	2,810	138	4.5	600.00
Berkeley	9,573	350	3.6	5,000.00
Eureka	3,122	96	3.1	200.00
Chico	803	17	2.1	100.00
Santa Cruz	1,852	35	1.9	636.00
Alhambra	1,139	14	1.2	425.00
				$285,801.55

The following cities offer no classes or other opportunity for the education of foreign adults: Grass Valley, Oroville, San Luis Obispo, Vallejo.

No report: Sacramento, Stockton, San Bernardino.

TABLE No. 5.

Cost of Maintaining Classes for the Education of Foreign-Born Adults in High Schools, 1923-1924.

County	High school	Expenditure
Alameda	Livermore Union	$230 00
Butte	Durham	
Contra Costa	Alhambra Union	2,400 00
	John Swett Union	11,251 85
	Riverview Union	1,319 00
Fresno	Caruthers Union	220 00
	Central Union	185 00
	Clovis Union	2,519 24
	Coalinga	168 00
	Fowler Union	210 00
	Kerman Union	3,000 98
	Kingsburg Joint	308 50
	Parlier	1,600 00
	Reedley Joint	750 00
	Selma	3,327 36
	Sanger	No report
	Tranquillity	520 00
Humboldt	Arcata Union	250 00
Imperial	Calexico	240 00
	Calipatria	175 00
	Central	2,600 00
Kern	Kern County	2,100 00
	Taft	250 00
Kings	Corcoran	700 00
	Hanford	4,026 36
	Lemoore	No report
Los Angeles	Bonita	3,300 00
	Burbank	240 00
	Citrus	3,299 00
	El Monte	700 00
	Glendale	No report
	Huntington Park	479 00
	Monrovia	2,500 00
	Puente	100 00
	Redondo Beach	725 00
Madera	Madera	979 60
Marin	Tamalpais	400 00
	Tomales Joint	252 00
Merced	West Side (Los Banos)	No report
	Merced Union	300 00
Monterey	Gonzales	2,100 00
	King City	No report
	Monterey	2,400 00
	Salinas	No report
Napa	Napa	200 00
Orange	Fullerton	9,050 00
	Orange	1,215 50
Placer	Lincoln	700 00
San Bernardino	Chaffey	1,000 00
	Needles	2,400 00
San Joaquin	Lodi	198 00
	West Side (Tracy)	400 00
San Luis Obispo	Paso Robles	74 00
San Mateo	Sequoia	725 00
Santa Barbara	Lompoc	1,395 00
Santa Clara	Campbell	400 00
	Mountain View	No report
	Palo Alto	2,752 00
	West Side	390 00
Santa Cruz	Watsonville	250 00
Siskiyou	Siskiyou Union (Weed)	2,500 00
	Siskiyou Union (Yreka)	350 00
Solano	Armijo	460 00
Sonoma	Analy	136 50
	Cloverdale	175 00
	Healdsburg	110 00
	Sonoma Valley	102 00
Stanislaus	Hughson	2,200 00
	Patterson	225 00
	Turlock	1,700 00
Tulare	Porterville	130 00
	Tulare	1,638 56
Ventura	Fillmore	519 00
	Santa Paula	No report
	Ventura	1,225 00
Yuba	Marysville	75 00
	Total	$88,830 45

TABLE No. 6.

High Schools in Whose Districts There Are Adults Unable to Speak English Where No Classes Are Offered, Arranged According to Counties.

County	High school	Nationalities predominating
Alameda	Hayward	Portuguese
	Washington	Portuguese, Italian
Amador	Jackson	Italian, Mexican, Austrian
	Sutter Creek	Italian, Mexican, Austrian
Butte	Biggs	Portuguese, Chinese, Japanese
Calaveras	Bret Harte	Italian, Mexican, Austrian
Colusa	Princeton Joint	Portuguese
Contra Costa	Liberty	Portuguese, Italian
Fresno	Laton Joint	Portuguese
Glenn	Hamilton	German, Russian
Humboldt	Fortuna	Italian
	Ferndale	Italian
Imperial	Imperial Valley	Mexican, Hindu, Japanese
Los Angeles	Compton	Mexican
	Covina	Mexican
	Downey	Mexican
	Montebello	Mexican
	Venice	Mexican
Madera	Raymond-Granite	Italian
Mendocino	Anderson Valley	Italian
	Mendocino	Portuguese
	Point Arena	Italian, Slavic
	Willits	Italian
Merced	Dos Palos	Italian
	Hilmar	Swedish
Modoc	Modoc	French
Monterey	King City	No report
Napa	St. Helena	Italian
Orange	Anaheim	Mexican
	Garden Grove	Mexican
Placer	Roseville	Mexican, Italian
Riverside	Banning	Mexican
	Corona	Mexican
	Elsinore	Mexican
	Hemet	Mexican
	Palo Verde Valley	Mexican
	Perris	Mexican
San Joaquin	Escalon	Swedish
	Linden	Italian
	Manteca	Italian
San Luis Obispo	Arroyo Grande	Portuguese
	Coast	Swiss
	Margarita Black	Portuguese, Swiss
San Mateo	Half Moon Bay	Italian
Santa Barbara	Carpinteria	Mexican
	Santa Maria	Mexican
	Santa Ynez	Mexican
Sacramento	Courtland	Chinese, Japanese
	Elk Grove	No report
	Galt	No report
San Bernardino	Barstow	Mexican
	Colton	Mexican
	Victor Valley	Spanish
San Diego	Coronado	Mexican
	Escondido	Mexican
	Grossmont	Mexican
	Oceanside	Mexican
	Sweetwater	Mexican
Santa Clara	Gilroy	Italian, Japanese
	Live Oak	Italian
	Santa Clara	Portuguese, Spanish
Siskiyou	Yreka	Italian, Mexican
Solano	Vacaville	No report
Sonoma	Geyserville	Italian
Stanislaus	Oakdale	Italian
Sutter	Yuba City	No report
Tulare	Orosi	No report
Tuolumne	Sonora	Italian, Austrian
Yolo	Winters Joint	Spanish, Japanese

Total: 69 High schools where classes should be offered in 1924-1925.

Respectfully submitted.

ETHEL RICHARDSON,
Assistant Superintendent in charge of Adult Education.

REPORT OF THE ASSISTANT SUPERINTENDENT OF PUBLIC INSTRUCTION.

In Charge of Statistics and Accounts.

HON. WILL C. WOOD,
Superintendent of Public Instruction.

SIR: Surveys and statistical reports prepared by the Assistant Superintendent of Public Instruction in charge of statistics and accounts are submitted herewith as follows:

First: Survey of Union (Consolidated) Elementary Schools.

Second: Statistical Survey of Junior High Schools.

Third: Statistics of Acceleration and Retardation.

Fourth: Problems of Teacher-Training and Supply.

Fifth: The customary tabular statements reporting the condition, progress, services and financial transactions of all sections of the Public School System, Public School Offices and University of California.

Attention is directed to the fact that the requirements of section 1532 of the Political Code, subdivisions second and third, particularly relating to the date upon which the report of the Superintendent of Public Instruction must be rendered, are practically impossible of fulfillment and should be amended to conform to the present conditions of the public school system.

Respectfully,

A. R. HERON, C. P. A.,
Assistant Superintendent of Public Instruction,
in charge of Statistics and Accounts.

SURVEY OF UNION (CONSOLIDATED) ELEMENTARY SCHOOLS.

(Information for the year 1922-1923 is used as the basis of survey as the same facts for 1923-1924 can not be collected and tabulated in time for publication with this report.)

Values of consolidation of small schools are widely known. Three methods of consolidating the operation of elementary schools are provided in California.

One method is contained in section 1608*a* of the Political Code, adopted in 1923. This is a simple provision that one school district "may perform school service for another * * * and receive pay from the other * * * ", and sets up a prompt and direct process of entering into the necessary contract. This provision, being new, supplies no experience which can be surveyed at this time.

A second plan is contained in section 1617*e* of the Political Code; and provides that the trustees of one school district " * * * may

enter into contract * * * with any other elementary school district of the county * * *" for the education of the children of the first district. The procedure for authorizing such a contract involves an election in the first district, and several necessary later steps. The payment for such service apparently must be made from state and county apportionments. The time for making such contracts effective is somewhat restricted. Relatively few districts have taken advantage of this law and none of them have been included in this survey.

The third method is the one used in the case of each district included in this study. It consists of the formation of a "union" elementary district by two or more separate districts. Each district must vote upon such proposed union. Each district entering such union continues its own existence, and receives its apportionments of state and county aid on the basis of its own average daily attendance. Legal provision for creating union elementary districts are contained in sections 1585 to 1591, inclusive, of the Political Code.

Exhibit I—General Data.

Union elementary districts in state	142
Original districts included in unions	*395
Schools maintained by union districts	173
Teachers employed by union districts	851
Pupils enrolled in union districts	26,542
Average daily attendance in union districts	22,587

Exhibit II—Districts Included in Union Districts.

76 Unions include 2 original districts each.
38 Unions include 3 original districts each.
17 Unions include 4 original districts each.
6 Unions include 5 original districts each.
4 Unions include 6 original districts each.
1 Union includes 7 original districts.

Exhibit II shows the composition of existing union districts in terms of the number of original districts which have entered each union district. It will be noted that more than half the existing union districts include two original districts each. Of the 395 original districts now in union districts, 152 are in two-district unions and 114 are in three-district unions.

Exhibit III—Schools Maintained by Union Districts.

128 Union Districts maintain 1 school each.
6 Union Districts maintain 2 schools each.
5 Union Districts maintain 3 schools each.
1 Union District maintains 4 schools.
1 Union District maintains 6 schools.
1 Union District maintains 8 schools.

Exhibit III shows the number of union districts maintaining one school and those maintaining more than one school.

Practically all the union districts—134 out of a total of 142—employed two or more teachers. The consolidation of two one-teacher districts into one union district did not generally result in a reduced teaching force. Of the existing union districts, 76 consist of two original districts each but only 8 of the union districts were served by

*Five original districts subsequently suspended.

one teacher each. This indicates that the first desire of the districts forming union districts has been to provide better school facilities for their children, not to reduce the cost of such schooling.

Exhibit IV—Statistics of Union Elementary Schools for 1922-1923 Classified According to Size of District Expressed in Terms of Teachers Employed.

1 Number of teachers employed	2 Number of union districts employing	3 Total number of teachers employed by such union districts	4 State enrollment in such union districts	5 Average daily attendance in such union districts	6 State enrollment per teacher in such union districts	7 Average daily attendance per teacher in such union districts	8 Cost per pupil on average daily attendance
1 teacher	8	8	165	137	20.62	17.12	$143 6-
2 teachers	30	60	1,369	1,125	22.82	18.75	117 64
3 teachers	25	75	2,114	1,784	28.19	23.79	99 04
4 teachers	18	72	2,209	1,911	30.57	25.15	82 65
5 teachers	10	50	1,569	1,350	30.14	27.00	80 20
6 teachers	6	36	1,152	1,022	32.00	28.39	87 80
7 teachers	6	42	1,467	1,215	34.93	28.93	72 64
8 or more teachers	39	508	16,497	14,043	32.47	27.64	77 89
Totals	142	851	26,542	22,587	31.18	26.54	$82 64

Exhibit IV presents various facts regarding union districts classified according to the number of teachers employed by the district.

Columns 6, 7 and 8 of this exhibit may be considered in the light of the general average of all elementary schools of the state. In the entire elementary school system, during 1922-1923, the state enrollment was 30.74 pupils per teacher; the average daily attendance was 25.87 pupils per teacher; the cost exclusive of transfers was $82.57 per pupil. The cost of $82.64 per pupil in union districts includes certain transfers which cannot readily be segregated; therefore the cost per pupil in union districts is actually slightly lower than in the elementary schools as a whole.

Of the original districts now included in union districts, over two hundred would otherwise exist as one-teacher districts. It is therefore interesting to examine the following 1922-1923 statistics of all one-teacher districts in the state not included in union districts:

Number of one-teacher districts not in union districts	1,850
Total state enrollment in such districts	32,431
Total average daily attendance in such districts	25,395
State enrollment per teacher in such districts	17.50
Average daily attendance per teacher in such districts	14.27
Cost per pupil in average daily attendance in such districts	$117.08

It has been impossible to make a direct study of retardation in one-teacher school districts as compared with union districts composed of two or more one-teacher districts. However, it is possible to determine that retardation is relatively higher in one-teacher districts than in larger schools.

In 18 counties, there are 633 elementary districts outside union districts and of this number 537, or 85 per cent, are one-teacher districts. In these counties, on March 1, 1924, 2053 pupils out of a total of 19,368 were "repeating" a grade—taking the same work a second time because of failure of promotion. "Repeaters" were 10.6 per cent of the total.

In one county containing one city of over 50,000 population, 33 districts included in unions, 54 one-teacher districts outside unions, and 21 larger districts, the following is reported:

In the city only, "repeaters" were 666 out of a total of 11,526; "repeaters" were 5.8 per cent of the total.

In the county outside the city "repeaters" were 582 out of a total of 6430; "repeaters" were 9.0 per cent of the total.

From these typical situations it appears that retardation and repetition of grades are likely to be much greater where one-teacher schools are the rule than where they are the exception. Mere size of schools has little direct relation to this relative efficiency. Indirectly, the elimination of one-teacher or one-room schools tends toward increased efficiency, first, by producing conditions likely to attract better teachers, second, by making possible specialization in primary and advanced grades, and third, by providing better equipment and better buildings at less cost.

The saving in building costs which results from one union school serving in place of two or more separate district buildings is a potent factor in promoting union districts. It is in theory partly offset by the cost of transporting pupils to the central location. However, Exhibit IV indicates no increased operating cost from the addition of transportation costs; therefore the economy of consolidated buildings must be accepted as absolute.

A partial survey in 1922 indicated the following facts regarding transportation in the union elementary districts reporting:

Median average distance (one way) of transporting each pupil	4 miles
Median average time (one way) for transporting each pupil	25 minutes
Median cost per pupil per mile for transportation	3 cents
Median number of pupils transported	55

Of the unions reporting in the above survey 24 reported on relative percentages of attendance to enrollment before and after formation of the unions; 20 reported gains and 4 reported losses, the average of all being a gain of 5.4 per cent.

CONCLUSIONS.

Few union elementary districts have been formed since the year 1921–1922. It appears that districts are now inclined to use the simpler provisions of section 1617*c* or section 1608*a* of the Political Code to accomplish the practical results of school consolidation without actual union. A survey will be made in the near future to determine the extent to which the schools are using these legal provisions, and the results of such contracts as have been made thereunder.

STATISTICAL SURVEY OF JUNIOR HIGH SCHOOLS.

Junior high schools have become so important a section of the public school system that satistics regarding them are greatly needed. As constituted, however, there seems to be no opportunity to treat them as a separate classification in the statutory reports. These schools by law include two grades corresponding to the seventh and eighth grades of elementary work and one or two grades of high school work. Distinct requirements exist for the lower two grades in junior high schools, relat-

ing to records of enrollment and attendance, provision of funds, certification of teachers and other matters covered by statute. Apparently it is necessary that all reports relating to junior high schools be so segregated as to include in elementary school reports all data relating to seventh and eighth grade attendance, and in high school reports all data relating to management, and to ninth grade attendance.

Information of prime value in matters of growth, cost, and service of junior high schools in the state as a whole has been difficult to secure, because of this necessity of dual reporting. To provide as far as possible a group of facts reflecting the present condition of junior high school development, the county and local school officers have cooperated with the state office in compiling the data for a special report which is submitted herewith. The report relates to all junior high schools existing as of June 30, 1924.

Limitation of Survey.

This study makes no attempt to treat of strictly educational aspects of the junior high school movement. No effort is made to deal with educational objectives, courses of study, distinctive methods of instruction, or similar problems, which are dealt with in a forthcoming publication of the State Department of Education prepared by the Commissioner of Secondary Schools.

The questions covered by the survey here presented are those that permit of statistical treatment, including types of administration, history, enrollment, attendance, graduations, retardation and acceleration, teaching force, and finance.

Definition.

In other states the term "junior high school" has been used to describe various units of school organization, in most cases consisting of grades seven and eight; grades seven, eight and nine; grades eight, nine and ten, or grades seven, eight, nine and ten. Units organized on the same plan have also been described as intermediate schools or upper grammar schools. In all cases the organization involves the factors of a separate grouping of selected grades for purposes of administration, and a revision of both courses and methods of instruction to suit the needs of the ages 12 to 14 or 15.

In California the grouping of seventh, eighth and ninth grades in "intermediate schools" began as early as 1910. Present legislation, dating chiefly from 1917, defines junior high schools very specifically. In both legal provisions and common usage the name "junior high school" has completely superseded "intermediate school" in this state.

A junior high school in California is a school unit, administered by a high school board, and including grades seven, eight and nine or grades seven, eight, nine and ten. Courses of study for junior high schools are subject to the approval of the State Board of Education in the same manner as those for regular high schools.

In other states, organization of "six-year high schools" has been provided and many such schools exist. Specific authority for such organization is not given in the laws of California; but in many cases junior high schools have been organized and practically attached to a senior high school. In many cases, the same buildings are used, the same principal and teachers serve both schools, and in effect the grades

seven to twelve are comprehended in one school. The state recognizes a junior high school when legally organized, and those attached to senior high schools are included in this survey; but their operation is obviously so different from that of separate junior high schools that separate statistical treatment is used in most phases of the study. Junior high schools reported as attached to senior high schools in the manner described are 27 out of a total of 86 junior high schools in the state.

Method of Establishment.

The law authorizing the establishment of junior high schools provides for their establishment by boards of high school trustees or city boards of education (section 1720, Political Code). In the case of a county or union high school district, the establishment must be by the written consent of a majority of the boards of trustees of elementary districts included in the high school district, or by authority of a majority vote at an election called for that purpose (section 1750*a*, Political Code). In a district governed by a city board of education the authority is practically automatic as the high school board and the elementary board are identical.

Of the 86 junior high schools existing as of June 30, 1924, 67 are in districts governed by city boards of education; 19 were established by written consent of a majority of the boards of trustees of the elementary districts included; and none were reported as established by authority of a special election for that purpose.

Time of Establishment.

The 86 junior high schools existing as of June 30, 1924, were established as junior high schools or intermediate schools in the years indicated in the following exhibit:

Exhibit No 1—Year of Establishment of Present Junior High Schools.

School year in which established	Separate junior high schools	Junior high schools connected with senior high schools	Total
1923–1924	9	5	14
1922–1923	14	2	16
1921–1922	5	5	10
1920–1921	9	2	11
1919–1920	--	2	2
1918–1919	1	2	3
1917–1918	--	4	4
1916–1917	1	2	3
1915–1916	5	--	5
1914–1915	1	1	2
1913–1914	--	1	1
1912–1913 or before	14	1	15
Totals	59	27	86

It will be noted that the years during and immediately following the World War are marked by a practical halt in the movement for the establishment of junior high schools. In the two years from 1911 to 1913, there were established almost as many junior high (or intermediate) schools, as during the seven years following. Since 1919–1920, however, the movement has progressed rapidly. Of the junior high schools reported as of June 30, 1924, almost half had been established

within the past three years, and 60 per cent within the past four years.

In addition to the junior high schools included in this survey, the cities of Eureka, Sacramento and San Jose have adopted the reorganization program and will maintain junior high schools during the school year 1924–1925.

Related Senior High Schools.

In high school districts which have established junior high schools there are 67 senior high schools. Of these 27 are directly connected with junior high schools to such an extent that the two constitute virtually one six-year high school. Two others are two-year senior high schools including eleventh and twelfth grades only. Six others are three-year senior high schools including the tenth, eleventh and twelfth grades and not directly related to any junior high school. Thirty-two are full four-year high schools.

Elementary Enrollment in Junior High Schools.

Where junior high schools have been organized in union high school districts, the majority of the elementary districts within the high school districts continue to maintain seventh and eighth grades in their elementary schools. Where junior high schools have been organized under city boards of education, it has been possible in some cases to provide for all of the seventh and eighth grade pupils in the junior high school, leaving to the elementary school organization the responsibility for the first six grades only. The largest city where this accomplishment seems to have been possible is Berkeley. In Los Angeles city, nearly 80 per cent of the total seventh and eighth grade enrollment is reported as being cared for in junior high schools; in Oakland something over 60 per cent; in Fresno approximately 70 per cent; in Long Beach something over 70 per cent; in San Diego approximately 75 per cent. In San Francisco, the establishment of junior high schools has been more recent than in the other large cities. Buildings are being provided for this type of school as rapidly as possible but during the past year only about 10 per cent of the total seventh and eighth grade enrollment was cared for in junior high schools.

It is interesting to note that pupils enrolled in the seventh and eighth grades in junior high schools (including those connected with senior high schools) represent approximately 28.7 per cent of the total enrollment in corresponding grades in the entire state; pupils enrolled in ninth grade in such junior high schools represent approximately 27.8 per cent of the ninth grade enrollment of the state.

The seventh and eighth grade enrollment in these counties in which junior high schools exist represents 72 per cent of the total enrollment in such grades throughout the state. The ninth grade (or first-year high school) enrollment in these counties represents 69.2 per cent of the total ninth grade enrollment of the state.

In two of the 35 high school districts where junior high schools have been established, operation of the junior high school is not reported in such a manner as to permit of tabulation, due to incomplete organization.

In the 33 high school districts where junior high schools have been operated to an extent to permit tabulation, including junior high schools connected with senior high schools, the following results appear:

Eleven of the 33 districts indicate all their seventh and eighth grade pupils as being in junior high schools.

Three of the 33 districts report 90 per cent to 99 per cent of their seventh and eighth grade pupils as being in junior high schools.

Seven of the 33 districts report 61 per cent to 80 per cent of their seventh and eighth grade pupils as being in junior high schools.

The 21 districts reporting as above include about 96 per cent of the total junior high school enrollment of the state.

Ninth Grade Enrollment in Junior High Schools.

Greater progress appears to have been made in providing for inclusion of ninth grade (or first-year high school) pupils in the junior high schools, compared with inclusion of seventh and eighth grade enrollment, as indicated by the following:

Sixteen of the 33 districts report all of their ninth grade pupils as being in junior high schools.

Two of the 33 districts report 81 per cent to 90 per cent of their ninth grade pupils as being in junior high schools.

Four of the 33 districts report 61 per cent to 80 per cent of their ninth grade pupils as being in junior high schools.

Seven of the 33 districts report less than 40 per cent of their ninth grade pupils as being in junior high schools.

Teachers in Junior High Schools.

The types of certificates held by teachers employed in junior high schools indicate clearly the process of transition through which such schools are passing. Laws governing the employment of teachers in junior high schools permit holders of general elementary certificates to teach in grades of junior high schools corresponding to the seventh and eighth grades of the elementary school; authorize holders of special elementary certificates to teach in all junior high school grades the special subjects named in such certificates; provide for a junior high school credential authorizing the holder to teach in any grade of a junior high school or an elementary school; and authorize holders of secondary credentials to teach in any elementary or secondary grades including the junior high schools.

Relatively few junior high school teachers employed during 1923–1924 were holders of junior high school certificates. This condition raises an interesting question, inasmuch as this type of certificate and credential is designed especially to serve the needs of these schools. At least two factors are represented in the explanation: first, the recent establishment of this type of credential, and second, an apparent policy in some districts to establish a standard for junior high schools fully equal to that for senior high schools. For instance, in one large city employing 602 teachers in junior high schools not connected with senior high schools, 346 of those teachers have regular secondary (high school) certificates, 253 have special secondary certificates (covering the teach-

ing of special subjects in high schools) and 3 have regular elementary certificates, and none have junior high school certificates.

The following table indicates the various types of certificates held by all teachers in junior high schools not connected with senior high schools. Similar information for junior high schools connected with senior high schools has not been tabulated for the reason that the faculties of such schools are usually identical in large measure with those of the associated senior high school.

Exhibit No. 2—Types of Certificates Held by Teachers in Junior High Schools Not Connected With Senior High Schools, During the Year 1923-1924.

Certificate	Number holding	Per cent of total
Regular secondary	695	39.8
Junior high	205	11.7
Regular elementary	170	9.7
Special secondary	646	37.0
Special elementary	32	1.8
Totals	1,748	100.00

Acceleration and Retardation in Junior High Schools.

Included in the survey of acceleration and retardation which is a part of this report are items of information bearing on the results of junior high school establishments in the saving of time of pupils. Exhibit No. 3 below deals with acceleration and retardation of seventh grade pupils in counties where junior high schools exist as compared with counties where no junior high schools exist. Exhibit No. 4 presents similar facts regarding eighth grade pupils.

Exhibit No. 3—Acceleration and Retardation of Seventh Grade Pupils as of March 1, 1924.

	In all counties having junior high schools	In all counties not having junior high schools	Total in entire state
Percentage of pupils accelerated	7.07	5.12	6.50
Percentage of pupils of normal ages	58.31	55.10	57.37
Percentage of pupils retarded	34.62	39.78	36.13
Percentage of pupils repeating grade	5.18	9.68	6.50
Percentage of pupils taking two grades in year	3.03	2.73	2.94

Exhibit No. 4—Acceleration and Retardation of Eighth Grade Pupils as of March 1, 1924.

	In all counties having junior high schools	In all counties not having junior high schools	Total in entire state
Percentage of pupils accelerated	7.48	5.77	6.97
Percentage of pupils of normal ages	60.81	56.34	59.47
Percentage of pupils retarded	31.71	37.89	33.56
Percentage of pupils repeating grade	3.83	7.85	5.03
Percentage of pupils taking two grades in year	3.22	3.08	3.18

Factors other than junior high school organization undoubtedly influence the conditions above noted. However, after allowing for all other measurable influences, it is clear that those areas which care for large portions of their seventh and eighth grade children in junior

high schools are thereby effecting very definite gains in eliminating retardation and repetitions of grades.

This is even more obvious when consideration is given to the length of time junior high schools have been in operation in the various counties, and the extent to which such schools care for the seventh and eighth grade pupils. Junior high schools in one of the largest counties date from 1922–1923 only, and in 1923–1924 included less than 10 per cent of the seventh and eighth grade pupils. If that county be eliminated from the junior high schools, the remaining counties will show the following results:

	Seventh grade pupils	Eighth grade pupils
Percentage of pupils accelerated	7.52	7.81
Percentage of pupils of normal ages	58.68	60.15
Percentage of pupils retarded	33.80	32.04
Percentage of pupils repeating grade	4.37	3.65
Percentage of pupils taking two grades in year	3.23	3.44

The omission of the county referred to in the foregoing also minimizes any doubt of the value of the comparisons, based on the assumption that counties having junior high schools are also the largest counties. The probably higher degree of retardation in small schools is also discounted by including the entire seventh and eighth grades of each county having junior high schools, although such counties also contain 483 one-room schools not in union districts.

It should be possible in the future to make a segregated report on retardation of seventh and eighth grade pupils in junior high schools for comparison with similar data in regular elementary schools. From the data now available, however, there is a definite indication that the junior high school aids directly in reducing loss of time due to retardation and failure of promotion.

Promotions From Eighth Grade.

With the adoption of junior high school organization, the end of the eighth grade ceases to be a point of completion or "graduation." The end of the ninth grade takes its place in the thought of both pupils and public as the point of passage from school to school with importance similar to elementary school graduation under the old type of organization.

The junior high schools report that during the year 1923–1924 a total of 11,710 of their pupils completed ninth grade. Of these 10,660 were in junior high schools not connected with senior high schools, and 1050 in junior high schools connected with senior high schools.

Promotions from eighth grade, or the number of pupils completing eighth grade, in junior high schools, is reported definitely for all but four junior high schools enrolling 1335 in the eighth grade. Including the incomplete figures for those schools, the reports indicate that 13,859 pupils completed eighth grade in junior high schools during the year 1923–1924.

This figure is practically subject to comparison with the total enrollment in the eighth grade in junior high schools, namely, 17,961. On this basis, the number completing eighth grade in junior high schools

was 77.16 per cent of the total number of individuals enrolled in eighth grade in such schools during the year.

In all schools of the state, including junior high schools, the individual enrollment in eighth grade during the year was 60,726; the number of graduates was 46,413, or 76.43 per cent, a slightly smaller percentage than in the junior high schools. In addition to this should be considered the fact that "promotion by subject" in most of the junior high schools transfers a large number of pupils to advanced work in certain subjects without recording such pupils as "graduating" from, or completing, the eighth grade.

Financial Data.

From the standpoint of finance, those junior high schools which are administered in direct connection with a senior high school present conditions entirely different from those of separate junior high school units. The organizations connected with senior high schools are in many cases not properly defined as "junior high schools."

Of the 27 schools reported as junior high schools connected with senior high schools, ten (10) are in districts serving rural or semirural communities, and have an average enrollment of less than 122, or an average of about 40 to each grade.

Costs of operation of junior high schools connected with senior high schools are not reported with sufficient definiteness to permit tabulation. In most cases it appears that costs of such junior high schools can not be accurately separated from those of the senior high schools. For all practical purposes, it is apparent that financial features of this survey will be more valuable if confined to those junior high schools which are distinctly of the type described in the law and whose financial records are definite.

Of the 59 junior high schools reported as distinct from senior high schools, one was operated for too short a period to provide any report. Three (3) of the other 58 report maintenance of seventh, eighth, ninth and tenth grades. Statistics for these three schools are presented separately from those of the three-year junior high schools, in Exhibit No. 5 of this survey.

Exhibit No. 5.—Statistics of Junior High Schools Not Connected With Senior High Schools: Enrollment, Attendance and Financial Data for the School Year 1923-1924.

	Junior high schools maintaining grades 7 to 10	Junior high schools maintaining grades 7, 8 and 9						
		Enrolling less than 100	Enrolling 100 to 199	Enrolling 200 to 299	Enrolling 300 to 399	Enrolling 400 to 499	Enrolling 500 or more	Total
Number of Schools	3	3	3	3	4	7	35	58
Total enrolled in grades 7 and 8	899	107	311	423	1,153	2,382	25,336	30,611
Total enrolled in grade 9	394	57	143	205	236	765	11,495	13,295
Total enrolled in grade 10	40							40
Total enrolled, all grades	1,333	164	454	628	1,389	3,147	36,831	43,946
Average daily attendance, grades 7 and 8	822	85	209	388	760	1,900	20,334	24,498
Average daily attendance, grades 9 and 10	323	46	111	191	225	618	9,156	10,670
Total average daily attendance	1,145	131	320	579	985	2,518	29,490	35,168
Expenditures for current purposes	$195,987.89	$20,951.90	$69,428.69	$88,312.59	$103,401.26	$285,676.69	$3,629,059.06	$4,392,818.08
Per capita cost of such expenditures on average daily attendance	171.16	159.94	216.96	152.55	102.95	113.45	123.07	124.91
Expenditures for capital outlays	54,642.80	566.13	570.23	2,835.05	1,058.07	8,158.13	669,398.72	737,229.13
Tuition collected from (or expense paid by) elementary districts	55,316.56	5,990.24	(a)13,211.59	23,137.49	(b)29,272.36	(c)85,570.44	(d)878,259.88	(e)1,090,758.56
Per capita cost to elementary districts on 7th and 8th grade average daily attendance	67.30	70.47	(a)85.24	59.63	(b)52.09	(c)61.61	(d)57.63	(e)58.52

(a) Tuition not paid for attendance of 54 in one school newly organized during year. Tuition is for attendance of 155 in 2 schools.
(b) Tuition not paid for attendance of 198 in one school where charge was offset by rent due to elementary district. Tuition is for attendance of 562 in 3 schools.
(c) Tuition not paid or not reported for attendance of 511 in 2 schools. Tuition is for attendance of 1,389 in 5 schools.
(d) Tuition not paid or not reported for attendance of 5,095 in 11 schools, being offset by rent or other charges. Tuition is for attendance of 15,239 in 24 schools.
(e) Tuition covers attendance of 18,640 in 43 schools.

Conclusions.

The nature of this survey leaves untouched many points which are of great interest to educators and administrators. The limitations of the work prevent definite conclusions on many questions of both public and professional interest. Certain facts, however, may be stated as a summary of the study.

First, the junior high school movement in California is progressing so rapidly that it will soon be universal in areas where enrollments of 200 or more are available for junior high school grades.

Second, the cost is, and will continue to be, considerably greater for seventh and eighth grade pupils than under elementary school organization. The average per capita cost in junior high schools not connected with senior high schools is $124.91. The average tuition for seventh and eighth grade pupils, based on local elementary costs, is $58.52. The average per capita cost in all the elementary schools is $81.24. The higher cost in junior high schools must be justified by the measurably greater value of the educational service.

Third, the cost in junior high schools is very much lower than in senior high schools—$124.91 compared with $211.82. This constitutes a saving in the case of ninth grade pupils largely offsetting the increased cost for seventh and eighth grade pupils.

Fourth, relatively lower costs for buildings and plant are indicated for junior high schools compared with senior high schools.

Fifth, junior high schools apparently improve educational service as measured by training of teachers, promotion of pupils, acceleration and retardation, and repetitions of grades.

Sixth, for purposes of economy, better administration and more accurate measurement of results, future legislation should provide for separate treatment of junior high schools in matters of legal control, apportionment of funds and statistical reports.

STATISTICS OF ACCELERATION AND RETARDATION.*

Reports of ages of all pupils in elementary schools on March 1, 1924, were collected by county superintendents of schools and transmitted to the state superintendent. A total of 584,968 children in grades one to eight inclusive were reported upon. A small additional group in ungraded classes was also reported upon but has been omitted from the tabulation.

So far as known, every child in the public elementary schools of the state on March 1, 1924, is included in these reports, with the exception of two one-teacher schools. The number covered by this survey is so large that it has been considered wise to analyze the results in some detail. The resulting tabulations are submitted as exhibits of this report.

Explanation of Terms.

Ages of children are reported in accordance with explicit instructions to teachers, simplified by a table indicating clearly, for purposes

*The Department of Education acknowledges with thanks the kindness of Dr. Virgil E. Dickson, Deputy City Superintendent of Schools and Director of the Bureau of Research and Guidance of the Oakland City Schools, in conference and suggestion upon the subject of this report.

of the report, the age on March 1 of a child born on any given date. The statistical age then represents an actual age ranging from one-half year younger to one-half year older than the statistical age. Thus, the number reported as seven years old includes all who on March 1 were between six and one-half and seven and one-half; eight years old includes all between seven and one-half and eight and one-half.

"Normal ages" as used for respective grades are those which are nationally accepted as the result of general experience. In terms of actual years, such "normal years" are as follows:

First Grade	ages $5\frac{1}{2}$ to $7\frac{1}{2}$
Second Grade	ages $6\frac{1}{2}$ to $8\frac{1}{2}$
Third Grade	ages $7\frac{1}{2}$ to $9\frac{1}{2}$
Fourth Grade	ages $8\frac{1}{2}$ to $10\frac{1}{2}$
Fifth Grade	ages $9\frac{1}{2}$ to $11\frac{1}{2}$
Sixth Grade	ages $10\frac{1}{2}$ to $12\frac{1}{2}$
Seventh Grade	ages $11\frac{1}{2}$ to $13\frac{1}{2}$
Eighth Grade	ages $12\frac{1}{2}$ to $14\frac{1}{2}$

Probable Causes.

The tabulations of acceleration and retardation are presented at this time without the accompaniment of studies as to causes. Certain outstanding situations, however, demand some consideration aside from the mere figures.

It is found that in some counties where school equipment is poor, where most of the teachers are undertrained and where attendance records are low, there is nevertheless a low percentage of retardation and of pupils repeating a grade, or failing of promotion. The assumption is almost automatic that the poorer school facilities in some of these counties are accompanied by a lower standard for promotion of pupils.

Foreign Children.

Certain counties whose percentages of pupils retarded are extremely high are evidently serving as frontiers in the assimilation of foreign groups; schools equipped for the education of American born English speaking children are failing to serve as fully the needs of foreign born. Presumably the large elements of foreigners in many of the counties will swell the "retarded" groups for the additional reason that many of them have been deprived of opportunities for continuous school in previous years.

Other counties having relatively high school standards still show high percentages of retardation. In some instances considerable groups of migratory laborers are known to be required for the agricultural needs of such counties. The deficiency of school opportunities of children of such families may bear some relation to the retardation.

Comparison of Boys and Girls.

An interesting ratio is shown between records of boys and girls. Girls exceed boys in the percentage accelerated, the percentage of normal ages, and the percentage taking two grades in one year, and show smaller percentages than boys in those retarded and those "repeating" a grade. In all grades, 35.02 per cent of the boys are

retarded as compared with 28.42 per cent of the girls. The "repeaters" among boys are 11.55 per cent of all boys, and among girls only 8.94 per cent. These marked differences appear as early as the first grade, where retardation is 22.69 per cent among boys and only 18.83 per cent among girls, and where "repeaters" are 21.20 per cent of all boys and only 17.55 per cent of all girls. How fully this difference in progress is explained by natural differences in rates of maturity is not definitely ascertainable. Whether any part of it may be due to a tendency to adapt the schools more directly to the needs of girls than of boys may be worthy of consideration in future studies.

Periods of Greatest Acceleration and Retardation.

It will be noted that retardation reaches a maximum among both boys and girls in the fifth grade. It is known that a habitually retarded pupil is likely to spend an average of 1.5 to 2.0 years in each grade. Entering school at six or later, many such pupils will have spent so much time in grades one to five that the end of the fifth grade finds them at the limit of the compulsory education age; they accordingly "drop out" and do not appear in the record of later grades, thus tending somewhat to reduce the retardation above the fifth grade.

The percentage of pupils accelerated increases in each grade to the eighth, a natural result of the added opportunity for such progress offered by each successive year in the pupil's life.

Repetition of grades, or failure of promotion, is greatest in the first grade, while pupils are experiencing the transition from home life to school life, and the resulting readjustment, and is consistently reduced through all grades to the eighth. The first grade in school marks the earliest general application of any standard of accomplishment and reflects the inevitable differences between children, which differences are not recorded prior to school entrance. The only criterion for a child entering the first grade is age. His promotion from the grade depends upon accomplishment. Since the accomplishment of children in first grade hinges upon numerous factors such as native endowment, previous training, health, and irregularity of attendance, it is but natural that all of these operating together will produce a large percentage of failure.

Percentages taking two grades in one year are substantially constant in all grades from the second to the eighth, being generally slightly higher among girls than among boys.

Use of the Facts.

It is recognized that such age grade studies as this do not reveal whether instruction is good or bad in a school, nor do they show whether or not the work in any grade is up to standard. They do show the speed with which children move through the school and, still more important, they reveal something of the physical maturity of individuals who are thrown together to work as a group. Retardation, measured by chronological age, is not a sure measure of the service rendered by the schools. There is, however, some relationship between such retardation and the degree to which the schools have adjusted themselves to the needs of the pupils retarded. It is conceivable that a pupil fourteen years old in the fifth grade may be receiving there the most valuable instruction which the school can give him. It is more likely, however,

that he is entitled to a modified or altered schooling to fit his individual needs, rather than to be required to spend years repeating work which he can not successfully accomplish, at the same time serving as a drag upon all other pupils in the fifth grade class. In the promotion or failure of pupils, greater attention must be paid in the future to the factors of physiological and social adjustment of each child to the class in which he must work.

Studies of retardation may, therefore, serve to call attention to situations where large numbers of pupils in the schools are not receiving instruction fitted to their respective needs and capacities.

The importance of such situations may be emphasized by the cost feature. The direct and actual cost of teaching the same grade a second time to 60,163 pupils, at the average cost per pupil, is as great as the cost of maintaining all the elementary schools in the San Francisco and Santa Clara counties, or all the elementary schools in the Sacramento valley, or more than five times the entire cost of the state teachers colleges during the year 1923–24.

More serious, however, is the indirect economic cost of the loss of time of these 60,163 repeaters and over 186,000 retarded pupils. The principles of genuine economy demand that a pupil who lives through a year only once shall not be required to waste that year or any part of it in repeating needlessly the work of a grade.

In so far as retardation is the result of conditions within the school, it is obvious that true economy in education will result from the provision of better trained teachers through an adequately financed teacher-training program; through better supervision and adjustment within the schools by means of adequate provision for county, city or district supervision; and through provision of well adapted modern textbooks in ample number. Expenditures for these purposes represent investments which will directly contribute to a reduction of failures and retardation.

Exhibit No. 1.—Acceleration and Retardation of Pupils in Elementary Grades as of March 1, 1924, Classified by Counties.

Counties	Pupils accelerated		Pupils of normal age		Pupils retarded		Pupils repeating grade		Pupils taking two grades in year	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
Alameda	2,527	5.15	33,563	68.42	12,965	26.43	4,649	9.48	1,763	3.59
Alpine	1	3.33	21	70.00	8	26.67	3	10.00	----------	----------
Amador	26	2.37	677	61.66	395	35.97	102	9.29	20	1.82
Butte	186	3.76	3,220	65.14	1,537	31.10	529	10.70	71	1.44
Calaveras	38	4.73	488	60.77	277	34.50	37	4.61	37	4.61
Colusa	63	4.44	919	64.72	438	30.84	103	7.25	13	.92
Contra Costa	282	2.97	6,319	66.57	2,892	30.46	760	8.01	172	1.81
Del Norte	13	2.41	272	50.46	254	47.13	109	20.22	7	1.30
El Dorado	55	5.57	662	67.07	270	27.36	67	6.79	10	1.01
Fresno	1,182	4.70	15,822	62.84	8,173	32.46	2,667	10.63	926	2.68
Glenn	57	3.07	1,252	67.34	550	29.59	132	7.10	44	2.37
Humboldt	141	2.45	3,441	59.68	2,183	37.87	679	11.88	75	1.30
Imperial	263	3.61	3,617	49.60	3,412	46.79	878	12.04	439	6.02
Inyo	40	3.28	828	67.87	352	28.85	75	6.15	21	1.72
Kern	465	4.18	6,947	62.44	3,713	33.38	969	8.71	158	1.42
Kings	52	1.23	2,206	52.11	1,975	46.66	536	12.66	72	1.70
Lake	47	5.62	579	69.26	210	25.12	67	8.01	35	4.19
Lassen	47	2.97	903	57.04	633	39.99	239	15.10	9	.57
Los Angeles	9,330	4.62	132,091	65.38	60,612	30.00	18,758	9.28	7,078	3.50
Madera	158	5.80	1,692	62.09	875	32.11	231	8.48	70	2.57
Marin	211	5.50	2,684	69.99	940	24.51	275	7.17	61	1.59
Mariposa	30	7.32	250	60.98	130	31.70	70	17.07	17	4.15
Mendocino	157	3.51	2,603	59.88	1,587	36.51	362	7.33	41	.94
Merced	172	3.14	3,085	56.21	2,231	40.65	544	9.91	52	.95
Modoc	25	3.07	527	64.58	264	32.35	62	7.60	19	2.33
Mono	10	7.09	83	58.87	48	34.04	15	10.64	15	10.64
Monterey	113	2.59	2,509	57.60	1,734	39.81	435	9.99	54	1.24
Napa	69	2.96	1,524	65.47	735	31.57	186	7.99	46	1.98
Nevada	44	3.07	900	62.76	490	34.17	139	9.69	51	3.56
Orange	436	2.89	9,764	64.62	4,910	32.49	4,909	32.49	436	2.89
Placer	177	5.24	2,084	61.73	1,115	33.03	294	8.71	30	.89
Plumas	48	6.75	477	67.09	186	26.16	42	5.91	24	3.38

Exhibit No. 1—Acceleration and Retardation of Pupils in Elementary Grades as of March 1, 1924, Classified by Counties—Continued.

Counties	Pupils accelerated		Pupils of normal age		Pupils retarded		Pupils repeating grade		Pupils taking two years in grade	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
Riverside	312	3.26	5,286	52.26	3,967	41.48	1,465	15.32	201	2.10
Sacramento	556	3.82	9,823	67.45	4,185	28.73	1,277	8.77	214	1.47
San Benito	59	3.84	964	62.76	513	33.40	158	10.29	50	3.26
San Bernardino	375	2.46	8,727	57.29	6,132	40.25	1,499	9.84	336	2.21
San Diego	865	4.82	11,779	65.60	5,312	29.58	1,248	6.95	565	3.15
San Francisco	1,434	2.99	32,836	68.49	13,673	28.52	4,841	10.10	1,086	2.27
San Joaquin	362	2.75	8,175	62.04	4,640	35.21	1,519	11.53	222	1.68
San Luis Obispo	76	2.05	2,231	60.07	1,407	37.88	367	9.88	54	1.45
San Mateo	358	5.04	4,810	67.76	1,931	27.20	482	6.79	210	2.96
Santa Barbara	167	2.72	3,568	58.01	2,415	39.27	713	11.59	204	3.32
Santa Clara	741	4.40	10,032	59.61	6,056	35.99	1,912	11.36	262	1.56
Santa Cruz	209	5.23	2,529	63.32	1,256	31.45	396	9.92	34	.85
Shasta	105	5.00	1,282	60.98	715	34.02	151	7.18	61	2.90
Sierra	15	6.17	172	70.78	56	23.05	27	11.11	3	1.23
Siskiyou	118	3.81	1,844	59.56	1,134	36.63	325	10.50	37	1.20
Solano	151	3.62	2,630	62.98	1,395	33.40	408	9.77	79	1.89
Sonoma	418	4.81	5,319	61.20	2,954	33.99	922	10.61	389	4.48
Stanislaus	250	2.93	5,334	62.43	2,960	34.64	840	9.83	178	2.08
Sutter	68	4.31	1,079	68.47	429	27.22	147	9.33	92	5.84
Tehama	99	4.90	1,313	64.97	609	30.13	173	8.56	76	3.76
Trinity	13	3.86	205	60.83	119	35.31	30	8.90	14	4.15
Tulare	356	2.97	7,047	58.71	4,599	38.32	989	8.24	513	4.27
Tuolumne	45	3.39	997	75.02	287	21.59	287	21.59	20	1.50
Ventura	257	4.73	2,805	51.60	2,374	43.67	762	14.02	51	.94
Yolo	80	3.38	1,555	65.67	733	30.95	250	10.56	16	.68
Yuba	24	2.34	437	60.86	257	35.80	52	7.24	7	.98
Totals	23,978	4.10	374,788	64.07	186,202	31.83	60,163	10.28	16,840	2.88

Exhibit No. 2.—Percentage of Acceleration and Retardation of Boys in Elementary Grades, as of March 1, 1924, Classified by Grades and Years.

Grade	Percentage of boys accelerated			Percentage of boys of normal ages		Percentage of boys retarded									
	Three years or more	Two years	One year	First normal year	Second normal year	One year	Two years	Three years	Four years	Five years	Six years	Seven years	Eight years	Nine years	Ten years or more
First	.....	.....	1.57	35.99	39.75	13.65	4.48	2.01	.92	.71	.41	.25	.14	.08	.04
Second	.....	.03	1.45	28.29	39.18	17.97	6.93	3.02	1.44	.85	.50	.20	.11	.02	.01
Third	.....	.04	2.84	25.33	35.58	19.64	8.36	4.06	2.10	1.16	.49	.25	.09	.02	.04
Fourth	.....	.12	2.93	24.00	33.65	19.57	10.40	4.85	2.59	1.19	.50	.14	.05	.01	.....
Fifth	.....	.18	4.37	22.67	32.39	20.93	10.48	5.29	2.33	.96	.27	.08	.03	.....	.02
Sixth	.01	.40	4.92	22.45	32.02	21.11	11.49	5.03	1.96	.45	10	.03	.02	.01	.....
Seventh	.02	.48	5.19	22.37	31.58	22.10	11.93	4.91	1.11	.21	.07	.02	.01	.....	.....
Eighth	.05	.52	5.69	22.45	33.18	22.48	10.86	2.92	.63	.12	.05	.05	.....	.....	.....
Totals	.01	.19	3.37	26.29	35.12	19.19	8.96	3.91	1.65	.75	.33	.14	.06	.02	.01

Exhibit No. 3.—Percentage of Acceleration and Retardation of Girls in Elementary Grades as of March 1, 1924, Classified by Grades and Years.

Grade	Percentage of girls accelerated			Percentage of girls of normal ages		Percentage of girls retarded									
	Three years or more	Two years	One year	First normal year	Second normal year	One year	Two years	Three years	Four years	Five years	Six years	Seven years	Eight years	Nine years	Ten years or more
First	.....	.....	1.70	39.30	39.20	11.80	3.90	1.80	1.00	.56	.35	.20	.10	.07	.02
Second	.....	.06	2.40	33.42	38.61	14.70	5.51	2.48	1.40	.68	.40	.21	.10	.03	.....
Third	.....	.06	3.59	30.54	36.91	15.91	6.71	2.98	1.69	.89	.43	.22	.06	.01	.....
Fourth	.....	.18	4.51	28.53	35.58	16.61	7.84	3.40	1.97	.85	.35	.14	.04	.....	.....
Fifth	.....	.23	5.21	27.70	34.30	17.73	8.51	3.67	1.70	.70	.18	.04	.03	.....	.....
Sixth	.01	.40	6.41	27.63	34.04	17.96	8.28	3.75	1.15	.27	.07	.01	.01	.01	.....
Seventh	.02	.65	6.66	27.58	33.36	18.72	8.81	3.31	.73	.14	.01	.01	.....	.....	.....
Eighth	.03	.61	7.03	27.15	35.10	19.44	8.00	2.09	.50	.04	.01	.....	.....	.....	.....
Totals	.....	.24	4.43	30.77	36.14	16.26	6.98	2.90	1.30	.55	.25	.11	.05	.02	.....

Exhibit No. 4.—Percentage of Acceleration and Retardation of All Pupils in Elementary Grades of as March 1, 1924, Classified by Grades and Years.

Grade	Percentage of all pupils accelerated			Percentage of all pupils of normal ages		Percentage of all pupils retarded									
	Three years or more	Two years	One year	First normal year	Second normal year	One year	Two years	Three years	Four years	Five years	Six years	Seven years	Eight years	Nine years	Ten years or more
First	.....	.....	1.66	37.53	39.50	12.80	4.20	1.90	.95	.65	.40	.20	.12	.07	.02
Second	.....	.04	1.91	30.76	38.91	16.40	6.25	2.76	1.42	.77	.45	.20	.10	.02	.01
Third	.....	.05	3.20	27.83	36.22	17.85	7.57	3.54	1.91	1.03	.46	.23	.08	.01	.02
Fourth	.....	.15	3.69	26.17	34.58	18.15	9.17	4.15	2.29	1.03	.43	.14	.04	.01	.....
Fifth	.....	.20	4.78	25.12	33.32	19.37	9.52	4.50	2.03	.83	.23	.06	.03	.....	.01
Sixth	.....	.40	5.66	25.00	33.01	19.56	9.91	4.40	1.57	.36	.09	.02	.01	.01	.....
Seventh	.02	.57	5.91	24.92	32.45	20.44	10.40	4.13	.92	.18	.04	.02	.....	.....	.....
Eighth	.03	.57	6.37	25.32	34.15	20.94	9.42	2.50	.57	.08	.03	.02	.....	.....	.....
Totals	.01	.21	3.88	28.46	35.61	17.77	8.00	3.42	1.48	.65	.29	.13	.06	.02	.01

Exhibit No. 5.—Acceleration and Retardation of Boys in Elementary Grades, as of March 1, 1924, Classified by Grades.

Grade	Boys accelerated		Boys of normal age		Boys retarded		Boys repeating grade		Boys taking two grades in year	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
First	827	1.57	40,001	75.74	11,981	22.69	11,194	21.20	557	1.05
Second	561	1.48	26,777	67.47	12,320	31.05	5,469	13.78	1,090	2.75
Third	1,172	2.88	24,790	60.91	14,738	36.21	4,478	11.00	1,370	3.37
Fourth	1,213	3.05	22,967	57.65	15,657	39.30	3,977	9.98	1,285	3.23
Fifth	1,715	4.55	20 741	55.06	15 217	40.39	3,322	8.82	1,170	3.11
Sixth	1,784	5.33	18,230	54.47	13,453	40.20	2,424	7.24	1,228	3.67
Seventh	1,740	5.69	16,483	53.95	12,331	40.36	2,319	7.59	848	2.78
Eighth	1,695	6.26	15,325	56.63	10,039	37.11	1,671	6.18	861	3.18
Totals	10,737	3.57	185,314	61.41	105,736	35.02	34,854	11.55	8,409	2.79

Exhibit No. 6.—Acceleration and Retardation of Girls in Elementary Grades, as of March 1, 1924, Classified by Grades.

Grade	Girls accelerated		Girls of normal age		Girls retarded		Girls repeating grade		Girls taking two grades in year	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
First	832	1.76	37,037	78.41	9,369	19.83	8,239	17.44	605	1.28
Second	901	2.46	26,401	72.03	9,347	25.51	3.911	10.67	1,216	3.32
Third	1,373	3.65	25,385	67.45	10,875	28.90	3,443	9.15	1,372	3.65
Fourth	1,718	4.69	23,466	64.11	11,419	31.20	2,880	7.87	1,174	3.21
Fifth	1,945	5.44	22,182	62.00	11,651	32.56	2,412	6.74	1,156	3.23
Sixth	2,198	6.82	19,883	61.67	10,159	31.51	1,765	5.47	1,113	3.45
Seventh	2,150	7.33	17,872	60.94	9,309	31.73	1,575	5.37	914	3.12
Eighth	2,124	7.67	17,248	62.25	8,337	30.08	1,084	3.91	881	3.18
Totals	13,241	4.67	189,474	66.91	80,466	28.42	25,309	8.94	8,431	2.98

Exhibit No. 7.—Acceleration and Retardation of All Pupils in Elementary Grades, as of March 1, 1924, Classified by Grades.

Grade	Pupils accelerated		Pupils of normal age		Pupils retarded		Pupils repeating grade		Pupils taking two grades in year	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
First	1,659	1.66	77,038	77.03	21,350	21.31	19,433	19.42	1,162	1.16
Second	1,492	1.95	53,178	69.67	21,667	28.38	9,380	12.92	2,306	3.02
Third	2,545	3.25	50,175	64.05	25,613	32.70	7,921	10.11	2,742	3.50
Fourth	2,931	3.84	46,433	60.75	27,076	35.41	6,857	8.97	2,459	3.22
Fifth	3,660	4.98	42,923	58.44	26,868	36.58	5,734	7.81	2,326	3.17
Sixth	3,982	6.06	38,113	58.01	23,612	35.93	4,189	6.38	2,341	3.56
Seventh	3,890	6.50	34,355	57.37	21,640	36.13	3,894	6.50	1,762	2.94
Eighth	3,819	6.97	32,573	59.47	18,376	33.56	2,755	5.03	1,742	3.18
Totals	23,978	4.10	374,788	64.07	186,202	31.83	60,163	10.29	16,840	2.90

PROBLEMS OF TEACHER SUPPLY AND TRAINING.

Various estimates have been made of the number of new teachers needed annually to serve the public schools in California. By careful analysis of records of the Teachers Retirement Salary Fund Board for the years 1921–1922 and 1922–1923, information on this subject has been obtained in more accurate and specific form than by any previous study. Presented herewith are, first, the most complete estimate previously made on the basis of general facts, and, second, the actual result of the study of two years' experience.

The following is a condensed summary of the estimate prepared in 1923 by the Deputy Director of Education, dealing with elementary schools only:

> During the next ten years California must have 34,851 new teachers for elementary schools—8291 for new positions, 26,560 for replacements.

For New Positions.

> During the past 14 years (from 1907–1908 to 1921–1922) the average biennial increase in the number of teaching positions in the elementary schools has been 10.879 per cent—almost 11 per cent increase each 2 years.
>
> Assuming that the increases of the past 14 years have been abnormal and that for the next 10 years the increase will be only 8 per cent each 2 years, the number of *new positions* in the elementary schools for which teachers must be provided will be 8291.

For Replacements.

> A study of records of graduates of one California normal school approximately 45 years after its establishment showed that the average teaching life of graduates to that date was less than 6 years.
>
> Another California study indicated an average teaching life of 3 years among teachers of rural schools.
>
> A survey for the Public School Teachers Retirement Board indicated yearly withdrawals and deaths approximating 16 per cent of the teachers employed.
>
> Studies elsewhere in the United States indicate an average teaching life of 3 to 6 years.
>
> It is conservative to estimate that replacements in California elementary schools must be 15 per cent of the total number employed each year. To be still more conservative it may be assumed that the replacements will not apply to the 8291 new positions.
>
> On this basis, replacements alone for the next ten years will require 26,560 new elementary teachers.

The following specific facts are secured by the study of the records of the Teachers Retirement Salary Fund Board for the years 1921–1922, and 1922–1923, and corresponding official statistics:

During the year 1921–1922 there were employed in the kindergarten, elementary and high schools, a total of 25,040 teachers.

Of this number approximately 1200 were exempt from contributing to the retirement fund and approximately 23,840 were contributors.

Of these 23,840 who were contributors in 1921–1922, a total of 3162 did not contribute (and therefore were not employed) during 1922–1923.

Therefore, the actual number withdrawing from service was 13 per cent of the number employed.

The withdrawals among the "exempt" teachers would be greater in proportion, as all such teachers were in service before 1913.

The records are not segregated to show elementary teachers as a

group. Observation indicates that withdrawals are more frequent among elementary teachers than high school teachers. No attempt is made to estimate the percentage of withdrawals among elementary teachers separately. The record of 13 per cent among all classes of teachers is accurate and sufficient.

Compared with the total of 25,040 teachers employed in 1921–1922, there were 28,283 teachers employed in 1922–1923—an increase of 13 per cent representing 3243 new positions.

For the year 1922–1923, therefore, the State of California was obliged to secure 6405 new teachers for kindergarten, elementary and high schools (aside from replacements of teachers exempt from the retirement fund contributions).

The teachers employed in 1921–1922 were distributed as follows:

In kindergarten schools	3 per cent
In elementary schools	71 per cent
In high schools	26 per cent

While recognizing that high schools are growing more rapidly than others, it is certain that nearly 70 per cent of the new teachers were needed for elementary schools—or approximately 4500 new elementary teachers.

To meet this need the state has provided seven state teachers colleges and the teachers college at the Southern Branch of the University of California. All these institutions combined were able, with the funds provided for 1922–1923, to supply less than 1500 teachers trained to teach in elementary schools—about one-third of the number needed. Private and other institutions supply a negligible number.

California is still depending on other states to train the vast majority of her teachers. To induce well-trained teachers to come from other states California must offer more attractive salaries as well as more attractive climate. From the standpoint of mere financial saving, it will obviously be less expensive finally for California to provide the necessary funds to enable her teachers colleges to train more instead of fewer of the young people of this state to teach in the schools of this state.

Too much importance can not be attached to the fact that the progress of California in improving the standard of training of elementary school teachers has not only been checked during the present biennium but that there was an actual though slight lowering of the standard. During the school year, 1920–21, 80.8 per cent of the teachers employed in the elementary schools were graduates of a normal school or college. For the school year, 1921–22, this standard had been improved so that 85.1 per cent of the teachers employed in the elementary schools were graduates of normal schools or colleges. The biennium covered by this report reflects very definitely the failure of California to provide adequate teacher training facilities to meet the increased needs of the schools. The percentage of elementary teachers employed who were graduates of a normal school or college was actually smaller each year than in the preceding year—84.6 per cent in 1922–23 and 84.4 per cent in 1923–24 as compared with 85.1 per cent in 1921–22.

SECTION II.

STATISTICS OF KINDERGARTEN SCHOOLS.

Table No. 1. Number of Teachers, Enrollment, Average Attendance and Average Number of Days Schools Were Maintained for the School Years Ending June 30, 1923, and June 30, 1924.

Table No. 2. Average Annual Salaries Paid Supervisors, Principals and Teachers (all women) during the School Years Ending June 30, 1923, and June 30, 1924.

Table No. 3-A. Receipts for Kindergarten Purposes in each County from all Sources During the School Year Ending June 30, 1923.

Table No. 3-B. Receipts for Kindergarten Purposes in each County from all Sources During the School Year Ending June 30, 1924.

Table No. 3-C. Expenditures for Kindergarten Purposes in each County During the School Year Ending June 30, 1923.

Table No. 3-D. Expenditures for Kindergarten Purposes in each County During the School Year Ending June 30, 1924.

Table No. 4. Number of Visits by School Officers, Number of Volumes in School Libraries, Valuation of Property, and Per Capita Cost Exclusive of Capital Outlays, in each County, for the School Years Ending June 30, 1923, and June 30, 1924.

SECTION II. STATISTICS OF KINDERGARTEN SCHOOLS.

TABLE No. 1.

Number of Teachers, Enrollment, Average Attendance and Average Number of Days Schools Were Maintained for the School Years Ending June 30, 1923, and June 30, 1924.

Counties	Total number of teachers employed (all women)		Total enrollment				Average daily attendance		Average number of days schools were maintained	
			1922-1923		1923-1924					
	1922-23	1923-24	Boys	Girls	Boys	Girls	1922-23	1923-24	1922-23	1923-24
Alameda	79	79	2,543	2,569	2,772	2,936	2,547	2,787	187	186
Alpine										
Amador										
Butte	3	3	48	61	59	61	57	60	170	168
Calaveras										
Colusa	1	1	30	21	30	27	30	21	169	163
Contra Costa	12	14	399	381	432	495	366	423	185	186
Del Norte										
El Dorado	1	1	15	12	16	11	18	16	170	170
Fresno	23	23	661	730	720	766	695	688	177	176
Glenn		1			25	17		20		162
Humboldt	4	5	112	87	127	135	91	109	184	187
Imperial	8	8	178	217	165	200	179	179	174	168
Inyo	1	1	19	15	9	11	22	20	169	172
Kern	26	28	524	550	606	627	557	596	170	174
Kings	7	8	129	120	132	117	114	116	172	170
Lake										
Lassen	2	2	60	58	68	83	62	78	171	167
Los Angeles	442	496	9,503	9,731	12,076	12,054	10,993	13,609	185	183
Madera	2	2	59	49	45	50	64	56	172	170
Marin	8	10	180	163	192	173	151	172	187	186
Mariposa										
Mendocino	2	2	49	48	45	46	47	45	170	168
Merced	4	4	90	96	70	76	114	95	169	170
Modoc	1	1	13	11	10	11	15	12	121	165
Mono										
Monterey		1			17	22		20		190
Napa	3	3	55	68	84	68	71	67	179	183
Nevada										
Orange	35	40	699	685	848	965	778	1,002	169	173
Placer										
Plumas										
Riverside	16	18	305	319	327	352	352	364	173	168
Sacramento	20	21	546	633	601	637	526	547	185	188
San Benito										
San Bernardino	16	17	401	417	457	480	540	542	166	169
San Diego	34	35	967	1,018	1,064	1,016	946	1,061	186	188
San Francisco	42	49	1,325	1,309	1,546	1,657	1,162	1,308	194	202
San Joaquin	7	8	299	313	313	360	236	317	182	178
San Luis Obispo	2	2	64	45	53	59	61	71	174	171
San Mateo	11	11	296	339	301	337	295	288	189	189
Santa Barbara	16	15	336	347	348	358	300	329	189	188
Santa Clara	17	20	537	503	578	562	479	523	176	178
Santa Cruz	3	3	84	85	94	116	72	89	189	185
Shasta	1	1	13	27	22	24	14	19	167	168
Sierra										
Siskiyou	2	2	37	49	41	30	48	39	177	171
Solano	7	7	178	185	161	167	154	160	181	185
Sonoma	5	5	108	142	127	172	113	151	175	175
Stanislaus	5	4	140	158	137	148	132	121	180	183
Sutter	2	2	33	43	49	48	39	46	165	159
Tehama	2	2	30	29	44	28	36	36	163	167
Trinity										
Tulare	9	9	213	222	173	219	214	210	166	170
Tuolumne	2	2	37	34	35	39	32	32	177	184
Ventura	7	8	146	174	218	222	173	231	182	180
Yolo	2	2	51	47	39	47	48	43	190	177
Yuba	1	1	26	26	42	36	31	45	163	179
Totals	893	977	21,538	22,136	25,318	26,065	22,974	26,763	183	183

SECTION II. STATISTICS OF KINDERGARTEN SCHOOLS.

TABLE No. 2.

Average Annual Salaries Paid Supervisors, Principals and Teachers (all women) During the School Years Ending June 30, 1923 and June 30, 1924.

Counties	Average annual salary paid			
	1922-23		1923-24	
	Number	Salary	Number	Salary
SUPERVISORS				
Fresno	1	$1,050 00	1	$480 00
Los Angeles	3	2,030 00	2	2,750 00
Sacramento	1	2,820 00	1	2 820 00
San Bernardino			1	1,700 00
Santa Barbara	1	1,750 00	1	1,750 00
Santa Clara	1	2,379 23	1	1,976 70
Totals	7	$2,012 74	7	$2,032 39
PRINCIPALS				
Contra Costa	3	$1,580 00		
Kern	14	1,685 71	14	$1,947 86
Kings			1	1,400 00
Los Angeles	326	1,629 35	403	1,642 28
Modoc	1	813 87		
Orange			6	1,530 00
Riverside	4	1,400 00	5	1,360 00
Sacramento	17	1,602 35	18	1,626 00
San Diego	20	1,585 58	25	1,539 01
Santa Barbara	6	1,400 00	5	1,430 00
Santa Clara	7	1,569 98	19	1,481 47
Ventura	1	1,500 00	1	1,560 00
Yuba	1	1.200 00		
Totals	400	$1,617.41	497	$1,631 98
TEACHERS				
Alameda	79	$1,822 34	79	$1,843 14
Butte	3	1,240 00	3	1,236 66
Colusa	1	1,400 00	1	1,300 00
Contra Costa	9	1,588 89	14	1,626 00
El Dorado	1	1,200 00	1	1,200 00
Fresno	22	1,495 43	22	1,493 87
Glenn			1	1,200 00
Humboldt	4	1,325 00	5	1,380 00
Imperial	8	1,604 75	8	1,578 12
Inyo	1	1,260 00	1	1,260 00
Kern	12	1,458 33	14	1,481 43
Kings	7	1,410 85	7	1,222 14
Lassen	2	1,267 50	2	1,320 00
Los Angeles	113	1,164 21	91	1,166 97
Madera	2	1,525 00	2	1,375 00
Marin	8	1,441 25	10	1,361 75
Mendocino	2	1,354 50	2	1,404 50
Merced	4	1.360 00	4	1,390 00
Modoc			1	1,215 00
Monterey			1	1,200 00
Napa	3	1,500 00	3	1,500 00
Orange	35	1,229 46	34	1,243 07
Riverside	12	1,246 66	13	1,235 77
Sacramento	2	900 00	2	900 00
San Bernardino	16	1,413 75	16	1,353 12
San Diego	14	1,271 45	10	1,208 60
San Francisco	42	1,678 57	49	1,656 23
San Joaquin	7	1,462 85	8	1,541 94
San Luis Obispo	2	1,575 00	2	1,550 00
San Mateo	11	1,292 73	11	1,367 36
Santa Barbara	9	1,211 11	9	1,261 11
Santa Clara	9	1,452 22		
Santa Cruz	3	1,468 00	3	1,553 00
Shasta	1	1,350 00	1	1,350 00
Siskiyou	2	1,172 50	2	1,107 50
Solano	7	1,488 00	7	1,500 00
Sonoma	5	1,508 00	5	1,540 00
Stanislaus	5	1,392 00	4	1,308 00
Sutter	2	1,395 00	2	1,345 00
Tehama	2	1,230 00	2	1,230 00
Tulare	9	1,389 44	9	1,367 22
Tuolumne	2	1,150 00	2	1,275 00
Ventura	6	1,247 09	7	1,357 14
Yolo	2	1,410 00	2	1,080 00
Yuba			1	1,320 00
Totals	486	$1,422 49	473	$1,437 00

SECTION II. STATISTICS OF KINDERGARTEN SCHOOLS.

TABLE No. 3-A

Receipts for Kindergarten Purposes in Each County From All Sources During the School Year Ending June 30, 1923.

	Balance on hand at beginning of school year	Receipts from taxes for maintenance	Receipts from special tax for buildings	Receipts from donations, etc.	Total receipts from all sources
Alameda	$11,466 90	$216,855 03			$228,321 93
Alpine					
Amador					
Butte	463 46	6,735 54	$1,640 09		8,839 09
Calaveras					
Colusa	—20 98	1,991 68			1,970 70
Contra Costa	16,557 13	29,170 42			45,727 55
Del Norte					
El Dorado	15 52	1,420 44			1,435 96
Fresno	30,181 83	64,352 23			94,534 06
Glenn					
Humboldt	3,533 21	8,747 43			12,280 64
Imperial	4,255 97	19,860 49		$30 86	24,147 32
Inyo	342 26	1,578 24			1,920 50
Kern	33,775 90	99,968 40			133,744 30
Kings	6,565 41	10,489 55			17,054 96
Lake					
Lassen	1,060 84	7,201 17			8,262 01
Los Angeles	122,025 40	1,196,025 05		3,047 57	1,321,098 02
Madera	539 02	6,972 81			7,511 83
Marin	4,480 27	17,263 24			21,743 51
Mariposa					
Mendocino		5,070 83			5,070 83
Merced	1,620 98	10,980 93			12,601 91
Modoc		1,336 63			1,336 63
Mono					
Monterey					
Napa	4,469 90	8,797 60			13,267 50
Nevada					
Orange	37,298 62	73,369 39		3 00	110,671 01
Placer					
Plumas					
Riverside	7,839 56	23,975 32			31,814 88
Sacramento	4,466 74	43,483 88			47,950 62
San Benito					
San Bernardino	27,026 92	38,171 56			65,198 48
San Diego	7,848 96	104,587 86			112,436 82
San Francisco		70,899 02			70,899 02
San Joaquin	1,140 15	23,732 51			24,872 66
San Luis Obispo	909 65	7,646 52			8,556 17
San Mateo	7,170 24	21,643 30			28,813 54
Santa Barbara	5,054 87	31,550 00		11 00	36,615 87
Santa Clara	8,821 24	41,991 76			50,813 00
Santa Cruz	1,261 22	6,750 86			8,012 08
Shasta	1,054 78	2,192 00			3,246 78
Sierra					
Siskiyou	145 99	2,472 03			2,618 02
Solano	4,859 33	15,849 84		51 00	20,760 17
Sonoma	7,943 62	12,049 09			19,992 71
Stanislaus	5,043 42	5,454 14			10,497 56
Sutter	110 20	3,169 28			3,279 48
Tehama	809 90	3,865 52			4,675 42
Trinity					
Tulare	6,930 31	29,504 31			36,434 62
Tuolumne	148 19	3,146 17			3,294 36
Ventura	5,083.32	10,475 51		104 62	15,663 45
Yolo	1,355 10	2,847 92			4,203 02
Yuba	163 67		1,811 91		1,975 58
Totals	$383,819 02	$2,293,645 50	$3,452 00	$3,248 05	$2,684,164 57

SECTION II. STATISTICS OF KINDERGARTEN SCHOOLS.

TABLE No. 3-B.

Receipts for Kindergarten Purposes in Each County From All Sources During the School Year Ending June 30, 1924.

	Balance on hand at beginning of school year	Receipts from taxes for maintenance	Receipts from special tax for buildings	Receipts from donations, etc.	Total receipts from all sources
Alameda	$5,800 71	$267,308 12			$273,108 83
Alpine					
Amador					
Butte	2,125 21	6,236 95	$392 81		8,754 97
Calaveras					
Colusa	563 00	1,206 29			1,769 29
Contra Costa	18,149 25	30,993 90			49,143 15
Del Norte					
El Dorado	148 76	1,514 01			1,662 77
Fresno	19,859 70	67,611 94		$3 56	87,475 20
Glenn		2,075 50			2,075 50
Humboldt	3,297 66	10,786 17			14,083 83
Imperial	2,896 60	22,732 98		171 00	25,800 58
Inyo	658 44	533 00			1,191 44
Kern	44,036 30	82,628 22			126,664 52
Kings	6,804 43	12,747 75			19,552 18
Lake					
Lassen	1,713 81	2,609 13			4,322 94
Los Angeles	117,462 22	1 833,055 64		5,787 61	1,956,305 47
Madera	5 29	7,592 68		324 60	7,922 57
Marin	5,715 17	17,393 52			23,108 69
Mariposa					
Mendocino	2,013 50	4,811 27			6,824 77
Merced	4,289 34	11,413 79			15,703 13
Modoc	514 43	832 95			1,347 38
Mono					
Monterey		1,797 46	299 58		2,097 04
Napa	6,482 09	7,398 10			13,880 19
Nevada					
Orange	44,893 44	129,064 31			173,957 75
Placer					
Plumas					
Riverside	6,629 58	26,788 10			33,417 68
Sacramento	4,072 55	51,170 45		83 58	55,326 58
San Benito					
San Bernardino	17,653 98	39,144 69			56,798 67
San Diego	11,043 40	113,193 22			124,236 62
San Francisco		88,584 63			88,584 63
San Joaquin	11,310 47	21,510 00			32,820 47
San Luis Obispo	4,205 86	9,316 21		1 63	13,523 70
San Mateo	10,564 75	24,053 21		200 00	34,817 96
Santa Barbara	8,271 70	36,788 00		12 00	45,071 70
Santa Clara	12,803 44	43,359 09			56,162 53
Santa Cruz	1,895 32	5,980 17			7,875 49
Shasta	1,501 84	1,400 00			2,901 84
Sierra					
Siskiyou	286 15	2,448 75			2,734 90
Solano	4,080 85	17,175 15			21,256 00
Sonoma	10,765 54	13,436 25			24,201 79
Stanislaus	522 13	6,927 60			7,449 73
Sutter	790 06	3,624 76			4,414 82
Tehama	1,931 28	2,127 21			4,058 49
Trinity					
Tulare	12,088 26	25,447 75			37,536 01
Tuolumne	487 61	2,838 11			3,325 72
Ventura	5,544 18	18,193 12		142 63	23,879 93
Yolo	1,361 91	3,315 22		36 33	4,713 46
Yuba	460 76	1,765 58			2,226 34
Totals	$415,700 97	$3,080,930 95	$692 39	$6,762 94	$3,504,087 25

SECTION II. STATISTICS OF KINDERGARTEN SCHOOLS.

TABLE No. 3-C

Expenditures for Kindergarten Purposes in Each County During the School Year Ending June 30, 1923.

	Teachers' salaries	Contingent expenses, supplies, repairs, rents, etc.	Sites, buildings and furniture	Library books	Apparatus	Total expenditures	Balance on hand at close of school year
Alameda	$171,340 93	$43,764 57	$4,958 07		$2,458 65	$222,522 22	$5,799 71
Alpine							
Amador							
Butte	3,610 00	1,947 46	1,150 17	$6 55		6,714 18	2,124 91
Calaveras							
Colusa	1,400 00	7 17				1,407 17	563 53
Contra Costa	19,425 29	7,803 01	350 00			27,578 30	18,149 25
Del Norte							
El Dorado	1,200 00	87 20				1,287 20	148 76
Fresno	35,839 64	34,987 32	2,493 22	119 70	1,234 48	74,674 36	19,859 70
Glenn							
Humboldt	5,300 00	3,685 93				8,985 93	3,294 71
Imperial	12,829 65	8,347 09		73 98		21,250 72	2,896 60
Inyo	1,260 00	2 06				1,262 06	658 44
Kern	37,008 92	9,688 98	40,657 33		2,352 77	89,708 00	44,036 30
Kings	7,936 12	2,041 91	272 50			10,250 53	6,804 43
Lake							
Lassen	2,535 00	3,635 64	377 56			6,548 20	1,713 81
Los Angeles	662,858 60	536,375 93	4,417 36	3 24		1,203,655 13	117,442 89
Madera	3,050 00	3,285 62	482 50		688 42	7,506.54	5 29
Marin	12,017 60	3,562 78	446 46	31 50		16,058 34	5,685 17
Mariposa							
Mendocino	2,600 25	457 08				3,057 33	2,013 50
Merced	5,038 29	2,244 42	344 65	6 68	678 53	8,312 57	4,289 34
Modoc	813 87	21 78				835 65	500 98
Mono							
Monterey							
Napa	4,250 00	1,023 85	1,511 56			6,785 41	6,482 09
Nevada							
Orange	42,993 88	3,220 61	19,018 68	8 60	535 80	65,777 57	44,893 44
Placer							
Plumas							

Riverside	16,738 60	8,224 45		21 75	200 50	25,185 30	6,629 58
Sacramento	33,327 15	10,548 67		2 25		43,878 07	4,072 55
San Benito							
San Bernardino	26,334 79	14,357 39	6,852 32			47,544 50	17,653 98
San Diego	52,609 88	48,522 31	190 05	56 18	15 00	101,393 42	11,043 40
San Francisco	68,676 75	1,576 27	640 00	6 00		70,899 02	
San Joaquin	10,240 00	1,990 73	1,314 39	17 07		13,562 19	11,310 47
San Luis Obispo	3,352 50	900 19	79 61		18 01	4,350 31	4,205 86
San Mateo	13,884 00	4,079 09	285 70			18,248 79	10,564 75
Santa Barbara	20,856 85	5,966 07	1,521 25			28,344 17	8,271 70
Santa Clara	26,102 31	7,796 17	4,020 94	90 14		38,009 56	12,803 44
Santa Cruz	4,649 00	1,395 36			72 40	6,116 76	1,895 32
Shasta	1,350 00	394 94				1,744 94	1,501 84
Sierra							
Siskiyou	2,345 00	55 70				2,400 70	217 32
Solano	10,311 03	6,270 20	56 80	9 00	32 29	16,679 32	4,080 85
Sonoma	6,936 69	559 08	1,731 40			9,227 17	10,765 54
Stanislaus	7,092 50	2,827 93	55 00			9,975 43	522 13
Sutter	2,400 00	89 42				2,489 42	790 06
Tehama	2,488 03	256 11				2,744 14	1,931 28
Trinity							
Tulare	12,841 48	10,013 80	1,447 40	43 68		24,346 36	12 088 26
Tuolumne	2,300 00	285 36	220 50	15 00	21 69	2,842 55	451 81
Ventura	7,723.20	1,879 24	516 83			10,119 27	5,544 18
Yolo	2,620 58	220 53				2,841 11	1,361 91
Yuba	1,200 00	314 82				1,514 82	460 76
Totals	$1,369,688 38	$794.714 24	$95,412 25	$511 32	$8,308 54	$2,268,634 73	$415,529 84

SECTION II. STATISTICS OF KINDERGARTEN SCHOOLS.

TABLE No. 3-D.

Expenditures for Kindergarten Purposes in Each County During the School Year Ending June 30, 1924.

Counties	Teachers' salaries	Contingent expenses, supplies, repairs, rents, etc.	Sites, buildings and furniture	Library books	Apparatus	Total expenditures excluding transfers	Transfers and payments to other districts	Total expenditures including transfers	Balance on hand at close of school year
Alameda	$188,422 85	$56,138 56	$10,842 26	$177 66	$1,045 44	$256,626 77	$1,811 25	$258,438 02	$14,670 81
Alpine									
Amador									
Butte	3,920 34	2,148 79	12 00		162 50	6,243 63		6,243 63	2,511 34
Calaveras									
Colusa	1,300 00	12 51				1,312 51		1,312 51	456 78
Contra Costa	21,015 10	4,313 60	2,100 39	49 42	2,669 17	30,147 68		30,147 68	18,995 47
Del Norte									
El Dorado	1,200 00	165 74			48 10	1,413 84		1,413 84	248 93
Fresno	33,989 61	8,251 53	453 15	12 53	2,385 18	45,092 00	420 00	45,512 00	41,963 20
Glenn	1,200 00	14 40	105 81			1,320 21		1,320 21	755 29
Humboldt	6,792 00	4,585 45	379 42	5 25	81 40	11,843 52		11,843 52	2,240 31
Imperial	12,647 69	11,806 59				24,454 28		24,454 28	1,346 30
Inyo	700 00	2 25				702 25		702 25	489 19
Kern	46,986 36	16,172 35	11,892 70	18 80	3,574 00	78,644 21	2,600 00	81,244 21	45,420 31
Kings	9,966 52	999 47	5,228 78			16,194 77	95 60	16,290 37	3,261 81
Lake									
Lassen	2,647 25	371 93			150 00	3,169 18		3,169 18	1,153 76
Los Angeles	759,997 46	288,421 28	5,553 12	1,281 84	906 00	1,056,159 70	783,150 30	1,839,310 00	116,995 47
Madera	3,930 37	370 28	345 25	66 51	674 28	5,386 69		5,386 69	2,535 88
Marin	13,749 75	2,335 85	1,462 68	21 46		17,569 74		17,569 74	5,538 95
Mariposa									
Mendocino	2,800 63	114 52	617 83			3,532 98		3,532 98	3,291 79
Merced	5,719 96	4,381 24	1,034 56		225 63	11,361 39		11,361 39	4,341 74
Modoc	1,215 00					1,215 00		1,215 00	132 38
Mono									
Monterey	1,100 00	149 68	66 00			1,315 68		1,315 68	781 36
Napa	4,500 59	1,443 68	539 18		117 20	6,600 65		6,600 65	7,279 54
Nevada									
Orange	51,728 62	16,699 78	68,831 54	130 45	3,014 95	140,405 34		140,405 34	33,552 41
Placer									
Plumas									

Riverside	23,586 05	2,820 63		12 82	334 77	26,754 57		26,754 57	6,663 11
Sacramento	33,316 22	12,037 74	883 15			46,237.11	2,000 00	48,237 11	7,089 47
San Benito						46 194 80		46,194 80	10 603 87
San Bernardino	24,793 00	19,357 10	2,044 70						
San Diego	51,554 12	58,512 18	118 33		41 75	110,226 38	3,441 57	113,667 95	10,568 67
San Francisco	80,282 10	8,302 53				88,584 63		88,584 63	
San Joaquin	12,335 54	4,358 29	1,242 91			17,936 74		17,936 74	14,883 73
San Luis Obispo	2,727 50	862 31	1,229 07			4,818 88		4,818 88	8,704 82
San Mateo	12,814 75	4,882 53	2,782 30			20,479 58		20,479 58	14,338 38
Santa Barbara	20,322 25	6,764 41	458 77	20 45	289 88	27 855 76		27,855 76	17,215 94
Santa Clara	29,503 88	9,240 41	5,584 59	3 95	660 40	44,993 23		44,993 23	11,169 30
Santa Cruz	4,907 00	1,655 65				6,562 65		6,562 65	1,312 84
Shasta	1,350 00	585 63				1,935 63		1,935 63	966 21
Sierra									
Siskiyou	2,215 00	10 72				2,225 72		2,225 72	509 18
Solano	12,269 60	4,354 00	1,109 18	2 40		17,735 18	4 65	17,739 83	3,516 17
Sonoma	7,310 35	357 29	10,015 08		73 00	17,755 72		17,755 72	6,446 07
Stanislaus	5,542 20	334 94		9 12	254 00	6,140 26		6,140 26	1,309 47
Sutter	2,560 00	378 19	461 00			3,399 19		3,399 19	1,015 63
Tehama	2,460 00	20 52				2,480 52		2,480 52	1,577 97
Trinity	12,370 00	3,767 82	2,705 72	7 82		18,851 36	2,564 10	21,415 46	16,120 55
Tulare	2,550 00	329 53		2 00	10 05	2,891 58		2,891 58	434 14
Tuolumne	10,327 50	2,106 89	6,164 26			18,598 65		18,598 65	5,281 28
Ventura	2,165 55	437 86	340 05			2,943 46	400 00	3,343 46	1,370 00
Yolo	1,190 00	426 08				1,616 08		1,616 08	610 25
Yuba									
Totals	$1,533,982 71	$560,803 03	$144,603 78	$1,822.48	$16,717 70	$2,257,929 70	$796 487 47	$3,054,417 17	$449,670 08

SECTION II. STATISTICS OF KINDERGARTEN SCHOOLS.

TABLE No. 4.

Number of Visits by School Officers, Number of Volumes in School Libraries, Valuation of Property, and Per Capita Cost Exclusive of Capital Outlays, in Each County, for the School Years Ending June 30, 1923, and June 30, 1924.

Counties	Number of visits made by county superintendent of schools		Number of visits made by school trustees		Number of volumes in school libraries		Valuation of property		Per capita cost exclusive of capital outlays	
	1922-1923	1923-1924	1922-1923	1923-1924	1922-1923	1923-1924	1922-1923	1923-1924	1922-1923	1923-1924
Alameda	23	36	58	81	817	848	$69,250	$79,897	$85 41	$88 84
Alpine										
Amador										
Butte	1	1	2		25		1,735		97 61	104 06
Calaveras										
Colusa	2				12		338	300	46 90	62 59
Contra Costa	14	17	9	16					74 39	66 30
Del Norte										
El Dorado	1	1	3		23	27	500	500	71 51	88 36
Fresno	31	33	19	11	49	192	12,640	12,640	103 85	65 49
Glenn		1		3		4		104		60 72
Humboldt	3	6		11		11		820	98 74	104 22
Imperial	5	5	10		88	69	2,845	2,853	118 71	136 62
Inyo	1	1	1	1					57 36	35 11
Kern	13	42	30	67	188	261	74,000	76,897	88 06	116 36
Kings	7	9	10	8			5,380	11,365	87 52	95 36
Lake										
Lassen	3	3	5	4		4	2,800	1,603	99 52	40 63
Los Angeles	342	399	151	146	405	1,534	29,222	18,780	105 47	134 75
Madera	2	2	9	1		1	850	1,250	109 75	90 02
Marin	12	13	4	7	48	62	1,625	3,680	106 34	93 64
Mariposa										
Mendocino	2	2	4	6	16	6		740	65 04	84 78
Merced	6	4	5	13	6	73	4,200	4,200	69 89	108 70
Modoc	1	2	1				400	400	55 71	101 25
Mono										
Monterey		1						66		62 48
Napa	5	5	18	10	7	16	1,636	2,240	74 27	90 47
Nevada										
Orange	24	21	30	59	146	289	64,195	89,270	60 10	71 43
Placer										
Plumas										
Riverside	7	4	3	13	35	70	15,230	16,560	71 54	73 50
Sacramento				18		276	6,660	7,175	83 41	86 57
San Benito										
San Bernardino	13	12	35	47	7	240	15,016	10,383	75 35	81 45
San Diego	13	13	38	23	251	478	19,620	11,530	106 98	107 02
San Francisco	70	237	44	35	94	135	10,880	12,085	60 46	67 72
San Joaquin	16	4	6	1	62	129	1,318		51 89	52 66
San Luis Obispo	3	2	2	2	24	25	5,666	5,685	70 01	50 56
San Mateo	14	13	22	24	157	146	12,400	14,900	60 89	61 45
Santa Barbara		4		8		274	38,355	36,600	89 40	83 27
Santa Clara				25			18,247	17,972	70 95	75 47
Santa Cruz	4	3	2						84 95	72 71
Shasta		1				5	170	5	124 63	101 87
Sierra										
Siskiyou	3		2	2	65		1,025	800	50 01	57 07
Solano	12	12	9	15		74	4,025	4,175	107 93	103 94
Sonoma	4	3	4	3					66 33	51 30
Stanislaus	5	4	3	4	27	28	1,340	1,340	75 15	50 74
Sutter	5	3	1	2					63 83	63 87
Tehama		2		3					76 22	68 90
Trinity										
Tulare	8	12	4	7	111	125	4,610	7,600	107 00	89 09
Tuolumne		2		1		16	670	1,485	81 93	90 36
Ventura	5	6			77	58	18,050	27,060	55 50	54 06
Yolo	3	2	2	12	64	64	1,460	1,460	59 18	69 84
Yuba	1	1	3	3	24	6	577		48 86	35 91
Totals	684	944	549	692	2,828	5,546	446,935	484,420	94 59	78 96

SECTION III.

STATISTICS OF ELEMENTARY SCHOOLS.

Table No. 5.	Number and Type of Districts in each County.
Table No. 6-A.	Kinds of Certificates Held by Teachers Employed in Elementary Schools for the School Year Ending June 30, 1923.
Table No. 6-B.	Kinds of Certificates Held by Teachers Employed in Elementary Schools for the School Year Ending June 30, 1924.
Table No. 7-A.	Number of District Superintendents and Average Annual Salaries.
Table No. 7-B.	Number of Principals and Average Annual Salaries.
Table No. 7-C.	Number of Regular Teachers and Average Annual Salaries.
Table No. 7-D.	Number of Supervisors and Average Annual Salaries.
Table No. 7-E.	Number of Special Teachers and Average Annual Salaries.
Table No. 8-A.	State Enrollment Classified by Sex and by Counties.
Table No. 8-B.	State Enrollment (Including Post-Graduate Elementary Schools) Classified by Sex and by Grade.
Table No. 9.	Average Daily Attendance; Number of Graduates (Including Graduates from Post-Graduate Elementary Schools).
Table No. 10.	Average Number of Days Schools were Open; Visits by School Officers; Books in School Libraries.
Table No. 11-A.	Money Apportioned by the State to Counties for Elementary Schools Within the School Year Ending June 30, 1923.
Table No. 11-B.	Money Apportioned by the State to Counties for Elementary Schools Within the School Year Ending June 30, 1924.
Table No. 12-A.	Receipts by Elementary School Districts in each County from All Sources During the School Year Ending June 30, 1923.
Table No. 12-B.	Receipts by Elementary School Districts in Each County from All Sources During the School Year Ending June 30, 1924.
Table No. 13-A.	Expenditures of Elementary Schools in each County for All Purposes for the School Year Ending June 30, 1923.
Table No. 13-B.	Expenditures of Elementary Schools in each County for All Purposes for the School Year Ending June 30, 1924.
Table No. 13-C.	Valuation of School Property, and Total Bonded Indebtedness as of June 30, 1923, and June 30, 1924.
Table No. 14.	Average Cost per Pupil in Average Daily Attendance in Each County (Exclusive of Capital Outlays and Transfers).

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No. 5.

Number and Type of Districts in Each County.

	School year 1922-1923						School year 1923-1924					
	Regular active districts		Active union districts	Joint districts	Suspended districts		Regular active districts		Active union districts	Joint districts	Suspended districts	
	Separate	In unions			Separate	In unions	Separate	In unions			Separate	In unions
Alameda	43			1			43			1		
Alpine	3						3					
Amador	29	5	3	2	4	1	29	4	2	2	3	
Butte	53	8	3		5		55	6	2			
Calaveras	40			2	8		39			1	8	
Colusa	22	6	3	1		1	21	7	3	1	1	1
Contra Costa	49	6	3				49	6	3			
Del Norte	13	2	1				13	2	1			
El Dorado	50			2	6		50			2	6	
Fresno	136	18	7	9	5		138	18	7	10	5	
Glenn	36	6	3	2	3		37	6	3	2	2	
Humboldt	103	2	1		9		105	2	1		4	
Imperial	44	9	4				44	9	4			
Inyo	23	3	1				23	5	2		1	
Kern	88	14	5		4		89	14	5		3	
Kings	33	4	2	1	1		33	4	2	1	1	
Lake	16	13	3		2		16	13	3		2	
Lassen	39	3	1		1		38	3	1		2	
Los Angeles	140	4	1	1	2		136	4	1	1	2	
Madera	43	4	2	1	2		40	4	2		4	
Marin	44			3	1		44			3	1	
Mariposa	28			2	4		28			2	4	
Mendocino	102	12	4		5		99	12	4		8	
Merced	60	8	4	6		1	60	7	3	4		
Modoc	40				3		40				2	
Mono	9	2	1		2		9	2	1		2	
Monterey	64	30	9	3	4		55	40	12	3	3	
Napa	38	12	4	3	1		37	12	4	4	1	
Nevada	37						33				3	
Orange	44	5	2				44	5	2			
Placer	39	12	3	2	3		40	13	3	3	2	
Plumas	28				3		31					
Riverside	48	21	5	1	2		47	20	5	1	2	1
Sacramento	56	20	6	3	4		57	20	6	2	5	
San Benito	31	4	2		6		32	4	2		4	
San Bernardino	65	6	3	1	2		67	6	3	1	2	
San Diego	76	33	12	1	1	2	70	37	13	1	1	2
San Francisco	1						1					
San Joaquin	81	4	2		4		83	4	2	1	3	
San Luis Obispo	83	4	2				83	4	2			
San Mateo	35				1		35				1	
Santa Barbara	55	10	4		1		55	10	4	1	1	
Santa Clara	68	11	3	4	1		63	14	4	3	1	
Santa Cruz	44	8	3		2		44	8	3			
Shasta	93				7		94				7	
Sierra	14				3		14				3	
Siskiyou	77	14	6		3		73	18	8		3	
Solano	46	4	1	2	1		45	4	1	2	2	
Sonoma	135	12	4	1	6		132	14	5	1	6	
Stanislaus	49	10	3	3	1		50	10	3	3	1	
Sutter	26	7	3		1		26	7	3			
Tehama	48	8	3	1	2		46	8	3	1	1	
Trinity	23	3	1		1		23	3	1		1	
Tulare	121	6	3	3	3		121	6	3	4	3	
Tuolumne	32						32					
Ventura	48	7	2	2			45	7	2	2	3	
Yolo	42	2	1	3	2		42	2	1	3	2	
Yuba	30	8	3		1		26	8	3		4	
Totals	2,965	390	142	66	133	5	2,927	412	149	66	126	4

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No. 6-A.

Kinds of Certificates Held by Teachers Employed in Elementary Schools for the School Year Ending June 30, 1923.

Counties	School year 1922-1923							
	Teachers employed			Kinds of certificates held				
	Men	Women	Total	Sec.	Elem.	Junior high	Kind. prim.	Special
Alameda	157	1,442	1,599	165	1,266		3	165
Alpine		3	3	2	1			
Amador	4	48	52	1	50			1
Butte	17	172	189	1	182			6
Calaveras	7	43	50		50			
Colusa	8	52	60		59		1	
Contra Costa	20	300	320	3	302		2	13
Del Norte	3	18	21		20			1
El Dorado	3	60	63		63			
Fresno	64	760	824	11	808		2	3
Glenn	5	80	85		84		1	
Humboldt	15	213	228	1	222		1	4
Imperial	20	214	234	3	206		15	10
Inyo	2	41	43	1	42			
Kern	26	416	442	17	400		8	17
Kings	17	129	146	2	138		6	
Lake	5	34	39	1	38			
Lassen	12	62	74	1	70		3	
Los Angeles	396	5,029	5,425	243	4,648		79	455
Madera	7	99	106	2	102			2
Marin	8	129	137	2	128			7
Mariposa	3	26	29		29			
Mendocino	12	156	168	4	163			1
Merced	14	168	182	2	179		1	
Modoc	5	46	51	1	50			
Mono	4	8	12	3	9			
Monterey	12	168	180	3	175			2
Napa	8	92	100	2	96			2
Nevada	5	62	67	2	63			2
Orange	41	450	491	14	443		3	31
Placer	9	104	113		108			5
Plumas	2	36	38		37			1
Riverside	16	289	305	7	285		4	9
Sacramento	22	495	517	7	491			19
San Benito	3	58	61		61			
San Bernardino	30	425	455	15	417		5	18
San Diego	42	559	601	18	532		9	42
San Francisco	36	1,572	1,608	86	1,437		3	82
San Joaquin	49	377	426	1	401		3	21
San Luis Obispo	9	154	163	2	156			5
San Mateo	16	190	206	11	188		1	6
Santa Barbara	16	205	221	19	183		4	15
Santa Clara	34	481	515	15	490		3	7
Santa Cruz	7	150	157	3	147			7
Shasta	5	115	120	1	119			
Sierra	3	13	16	1	15			
Siskiyou	20	132	152	4	148			
Solano	15	142	157	9	144			4
Sonoma	19	301	320	1	308			11
Stanislaus	24	271	295		285		7	3
Sutter	7	57	64	1	63			
Tehama	10	84	94	3	89			2
Trinity	5	23	28		28			
Tulare	36	360	396	3	389			4
Tuolumne	2	55	57		57			
Ventura	16	185	201	3	191			7
Yolo	8	83	91	1	87			3
Yuba	7	57	64		60			4
Totals	1,368	17,493	18,861	698	17,002		164	997

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No. 6-B.

Kinds of Certificates Held by Teachers Employed in Elementary Schools for the School Year Ending June 30, 1924.

Counties	School year 1923-1924							
	Teachers employed			Kinds of certificates held				
	Men	Women	Total	Sec.	Elem.	Junior high	Kind. prim.	Special
Alameda	161	1,496	1,657	165	1,240		10	242
Alpine	1	2	3		3			
Amador	5	45	50		49			1
Butte	18	177	195	1	187		2	5
Calaveras	7	45	52		52			
Colusa	8	52	60		59			1
Contra Costa	25	307	332	6	316		2	8
Del Norte	4	20	24		24			
El Dorado	6	65	71	2	67		1	1
Fresno	70	791	861	12	829		4	16
Glenn	9	76	85		83		1	1
Humboldt	22	212	234	1	220		4	9
Imperial	20	209	229	6	210		8	5
Inyo	1	43	44	1	43			
Kern	27	422	449	9	418		1	21
Kings	17	138	155	11	147			7
Lake	4	36	40	1	39			
Lassen	8	65	73		73			
Los Angeles	461	6,023	6,484	288	5,493		154	549
Madera	7	100	107	2	105			
Marin	10	134	144	4	137			3
Mariposa	3	28	31	2	29			
Mendocino	12	162	174	3	168		1	2
Merced	13	171	184	1	183			
Modoc	8	46	54		54			
Mono	2	9	11		11			
Monterey	11	167	178	3	168		3	4
Napa	7	92	99	1	96			2
Nevada	6	56	62		61			1
Orange	53	529	582	19	515			48
Placer	10	106	116		113			3
Plumas	3	35	38		37			1
Riverside	21	299	320	6	297		4	13
Sacramento	27	507	534	10	504			20
San Benito	3	60	63		63			
San Bernardino	32	437	469	17	436		7	9
San Diego	45	577	622	16	499	57	11	39
San Francisco	48	1,596	1,644	73	1,434	14	4	119
San Joaquin	52	387	439	2	417		3	17
San Luis Obispo	16	150	166	2	160			4
San Mateo	15	204	219	5	203		2	9
Santa Barbara	19	209	228	18	194		4	12
Santa Clara	40	500	540	14	514		3	9
Santa Cruz	8	155	163	1	158		1	3
Shasta	6	117	123		123			
Sierra	5	11	16	1	15			
Siskiyou	22	132	154	9	142		3	
Solano	16	143	159	7	149			3
Sonoma	18	310	328	7	314		3	4
Stanislaus	25	275	300	2	286		9	3
Sutter	9	56	65		63		1	1
Tehama	10	83	93	2	89			2
Trinity	3	25	28		28			
Tulare	34	378	412	5	404		1	2
Tuolumne	4	53	57		57			
Ventura	13	197	210	2	192		6	10
Yolo	6	85	91	2	86			3
Yuba	7	53	60		55		1	4
Totals	1,523	18,858	20,381	729	18,111	71	254	1,216

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No. 7-A.

Number of District Superintendents and Average Annual Salaries.

Counties	School year 1922-1923				School year 1923-1924			
	Men		Women		Men		Women	
	No.	Average salary	No.	Average salary	No.	Average salary	No.	Average salary
Alameda								
Alpine								
Amador								
Butte	1	3,600 00			1	$3,800 00		
Calaveras								
Colusa								
Contra Costa	4	3,082 50	1	$3,000 00	5	3,246 00	1	$3,000 00
Del Norte							1	2,200 00
El Dorado								
Fresno	3	3,250 00			6	3,041 66		
Glenn								
Humboldt								
Imperial	5	3,800 00			3	3,343 00		
Inyo								
Kern	2	3,900 00	1	3,000 00	3	4,000 00		
Kings	2	3,300 00			2	3,300 00		
Lake								
Lassen	1	3,300 00						
Los Angeles	17	3,242 60	2	2,732 50	16	3,433 20	1	3,000 00
Madera	1	3,600 00			1	3,600 00		
Marin	3	3,080 00			5	2,790 00		
Mariposa								
Mendocino								
Merced	3	2,026 66			2	3,030 00		
Modoc								
Mono								
Monterey	2	3,606 00			2	3,606 00		
Napa	1	2,700 00						
Nevada	1	3,300 00			1	3,300 00		
Orange	9	2,905 55			10	3,426 00		
Placer								
Plumas								
Riverside								
Sacramento	1	2,100 00	1	2,100 00				
San Benito					1	2,850 00		
San Bernardino	7	3,215 45	1	2,100 00	6	3,534 00	1	2,220 00
San Diego	2	3,110 00			1	3,720 00		
San Francisco								
San Joaquin	2	2,550 00			2	3,300 00		
San Luis Obispo								
San Mateo	4	3,400 00			5	3,340 00		
Santa Barbara	2	2,750 00			1	3,000 00		
Santa Clara	3	1,700 00	1	2,000 00	3	1,933 33		
Santa Cruz	1	2,000 00			1	2,000 00		
Shasta								
Sierra								
Siskiyou	3	2,990 00			3	3,037 50		
Solano	1	2,400 00			1	2,520 00		
Sonoma								
Stanislaus	1	2,800 00	1	2,700 00	2	2,750 00	1	2,700 00
Sutter								
Tehama	1	2,400 00			1	2,400 00		
Trinity								
Tulare	4	3,400 00			3	3,666 67		
Tuolumne								
Ventura	4	3,525 00			5	3,470 00		
Yolo	1	2,400 00			1	2,400 00		
Yuba	1	2,700 00						
Totals	93	*$3,078 00	8	*$2,545 00	93	*$3,258 76	5	*$2,624 00

*Average.

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No. 7-B.

Number of Principals and Average Annual Salary.

Counties	School year 1922-1923				School year 1923-1924			
	Men		Women		Men		Women	
	No.	Average salary	No.	Average salary	No.	Average salary	No.	Average salary
Alameda	65	$2,863 70	45	$2,295 77	68	$2,925 83	40	$2,366 55
Alpine								
Amador	3	2,000 00	2	1,535 00	4	1,922 18	1	1,520 00
Butte	12	1,110 92	14	1,538 85	9	2,017 77	19	1,451 89
Calaveras	3	1,490 00	4	1,433 12	3	1,566 67	4	1,480 00
Colusa	7	1,900 00			6	1,966 66	2	1,490 00
Contra Costa	11	2,165 45	32	1,842 15	11	2,266 36	32	1,951 16
Del Norte			2	1,650 00			1	1,260 00
El Dorado	1	1,425 00	3	1,560 00	2	1,462 50	3	1,560 00
Fresno	51	2,230 58	83	1,647 27	47	2,158 53	88	1,676 64
Glenn	4	2,055 00	12	1,272 50	6	1,845 83	9	1,271 67
Humboldt	9	1,857 78	30	1,531 67	13	1,766 92	31	1,533 84
Imperial	9	2,074 00	46	1,628 26	11	1,914 00	44	1,668 59
Inyo	1	1,215 00	4	1,397 50			7	1,398 42
Kern	8	2,581 25	49	1,931 48	7	2,200 00	54	1,928 89
Kings	9	1,797 22	19	1,497 36	10	1,830 00	19	1,540 00
Lake	3	1,766 66	2	1,425 00	2	2,025 00	4	1,410 75
Lassen			2	1,950 00			2	2,050 00
Los Angeles	115	2,717 95	306	2,217 41	120	2,762 84	331	2,301 20
Madera	5	1,425 00	14	1,565 00	3	1,683 33	15	1,553 73
Marin	2	2,300 00	22	1,693 78	1	2,200 00	24	1,753 16
Mariposa							1	1,330 00
Mendocino	7	2,024 14	12	1,371 66	8	2,066 25	14	1,410 71
Merced	6	1,708 75	27	1,465 53	8	1,796 25	29	1,478 51
Modoc	5	1,537 40			4	1,695 58	1	1,546 50
Mono								
Monterey	8	2,095 25	22	1,613 74	9	2,115 78	22	1,637 32
Napa	4	2,280 00	7	1,348 57	6	2,280 00	5	1,540 00
Nevada	2	1,750 00	1	1,500 00	2	1,850 00	1	1,500 00
Orange	16	1,866 87	43	1,780 69	19	2,088 67	50	1,880 89
Placer	6	2,053 33	6	1,448 33	7	1,980 00	6	1,420 33
Plumas	1	1,500 00	4	1,537 50	1	1,485 00	3	1,600 00
Riverside	7	2,022 85	35	1,604 85	14	2,056 00	31	1,526 42
Sacramento	7	2,262 85	42	2,077 08	9	2,156 96	39	2,112 51
San Benito	2	2,300 00	7	1,300 71	2	1,637 50	8	1,343 13
San Bernardino	10	2,257 50	43	1,620 88	11	1,694 00	47	1,695 00
San Diego	16	2,429 19	41	1,746 50	17	2,450 58	38	1,849 39
San Francisco	6	2,098 33	95	2,608 29	6	2,200 00	94	2,820 45
San Joaquin	27	2,068 41	39	1,616 53	27	2,238 24	42	1,676 29
San Luis Obispo	6	1,900 00	15	1,536 67	6	1,916 66	15	1,546 00
San Mateo	8	2,265 00	15	1,681 46	7	2,235 14	21	1,703 43
Santa Barbara	7	2,392 86	22	1,834 54	8	2,456 25	24	1,820 83
Santa Clara	14	2,255 35	34	1,614 87	17	2,235 00	30	1,629 22
Santa Cruz	4	2,151 25	14	1,474 71	5	1,982 36	16	1,466 50
Shasta	4	1,760 50	5	1,411 60	4	1,781 25	3	1,446 67
Sierra			1	1,500 00			1	1,500 00
Siskiyou	9	1,520 77	8	1,518 75	9	1,561 40	8	1,567 81
Solano	9	2,479 00	14	1,687 32	9	2,498 00	14	1,730 18
Sonoma	8	1,958 75	42	1,530 63	9	2,040 00	44	1,561 78
Stanislaus	16	1,990 62	31	1,498 22	17	1,968 82	29	1,549 48
Sutter	5	1,845 00	7	1,332 00	7	1,864 00	5	1,359 00
Tehama	4	1,651 25	9	1,359 72	5	1,369 00	8	1,413 00
Trinity			2	1,260 00			2	1,260 00
Tulare	23	1,769 67	57	1,472 57	22	1,879 77	64	1,500 03
Tuolumne	1	1,688 88	6	1,684 16	2	2,055 00	5	1,583 00
Ventura	6	1,834 17	20	1,582 20	4	1,839 38	19	1,682 37
Yolo	3	2,051 33	9	1,543 33	4	2,006 00	9	1,523 00
Yuba	3	1,547 50	2	1,252 50	4	2,356 25	2	1,325 00
Totals	578	*2,250 99	1,428	*1,841 75	612	*2,296 06	1,480	*1,897 99

*Average.

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No. 7-C.

Number of Regular Teachers and Average Annual Salaries.

Counties	School year 1922-1923				School year 1923-1924			
	Men		Women		Men		Women	
	No.	Average salary	No.	Average salary	No.	Average salary	No.	Average salary
Alameda	24	$1,991 54	1,294	$1,876 62	29	$1,992 83	1,324	$1,899 58
Alpine	------	----------	3	1,350 00	1	1,350 00	2	1,232 50
Amador	1	1,170 00	45	1,221 30	1	1,170 00	43	1,271 16
Butte	1	700 00	153	1,342 95	5	1,480 40	148	1,342 04
Calaveras	4	1,250 00	39	1,264 53	3	1,332 33	41	1,297 46
Colusa	1	1,200 00	50	1,328 64	1	1,800 00	50	1,372 80
Contra Costa	------	----------	255	1,581 14	6	2,041 66	271	1,603 72
Del Norte	3	1,375 00	15	1,299 64	4	1,485 00	17	1,400 62
El Dorado	1	1,215 00	57	1,215 58	3	1,330 00	61	1,227 84
Fresno	10	1,692 00	670	1,538 97	16	1,705 18	698	1,531 23
Glenn	1	1,500 00	66	1,232 87	3	1,480 00	65	1,235 88
Humboldt	6	1,417 50	179	1,383 27	6	1,360 42	177	1,385 89
Imperial	6	1,613 33	168	1,463 89	6	1,766 66	161	1,515 30
Inyo	1	1,200 00	36	1,209 79	1	1,200 00	35	1,212 81
Kern	9	1,626 66	338	1,609 48	9	1,731 35	347	1,683 43
Kings	4	1,516 66	106	1,305 95	2	1,450 00	115	1,348 70
Lake	2	1,200 00	32	1,237 93	2	1,200 00	30	1,233 33
Lassen	9	1,293 61	59	1,296 44	8	1,310 75	62	1,285 30
Los Angeles	120	1,782.52	4,278	1,703 15	148	1,797 74	5,157	1,680 81
Madera	------	----------	82	1,390 00	2	1,327 50	82	1,388 96
Marin	1	1,100 00	103	1,434 21	2	835 70	106	1,501 09
Mariposa	3	1,279 17	26	1,197 08	3	1,078 00	27	1,244 00
Mendocino	4	1,473 75	144	1,283 27	3	1,413 33	147	1,320 70
Merced	4	1,595 30	140	1,314 00	2	1,250 00	140	1,380 05
Modoc	------	----------	46	1,242 51	4	1,396 00	45	1,272 82
Mono	4	1,387 50	8	1,372 50	2	1,496 00	9	1,398 05
Monterey	1	1,800 00	144	1,415 44	------	----------	141	1,487 76
Napa	2	1,200 00	83	1,391 08	1	2,400 00	87	1,398 40
Nevada	1	1,350 00	58	1,333 94	3	1,521 67	54	1,332 00
Orange	7	1,921 42	376	1,425 08	5	1,685 00	420	1,470 36
Placer	3	1,233 33	93	1,361 18	3	1,640 00	98	1,287 09
Plumas	------	----------	31	1,267 74	2	1,335 00	31	1,353 71
Riverside	4	1,418 75	248	1,233 44	2	1,797 50	260	1,371 00
Sacramento	2	1,257 75	432	1,669 30	5	1,127 60	447	1,736 82
San Benito	1	1,275 00	51	1,372 18	------	----------	52	1,340 11
San Bernardino	7	1,474 57	366	1,376 75	8	1,438 00	375	1,371 00
San Diego	19	1,944 21	506	1,591 92	22	1,906 72	517	1,606 23
San Francisco	6	1,601 67	1,428	1,933 61	6	1,703 33	1,419	1,854 99
San Joaquin	11	1,738 60	323	1,573 67	15	1,784 63	334	1,623 36
San Luis Obispo	2	1,425 00	136	1,256 30	8	1,320 75	132	1,341 43
San Mateo	1	1,860 00	170	1,526 15	------	----------	176	1,540 63
Santa Barbara	1	1,350 00	172	1,595 71	2	1,800 00	180	1,603 73
Santa Clara	7	2,782 53	430	1,618 33	11	2,241 71	456	1,672 20
Santa Cruz	1	271 43	134	1,485 43	------	----------	136	1,344 96
Shasta	1	1,215 00	110	1,269 16	2	1,237 50	114	1,298 42
Sierra	3	1,533 33	12	1,392 54	5	1,414 00	10	1,352 50
Siskiyou	8	1,272 62	124	1,293 67	10	1,370 98	124	1,330 01
Solano	5	1,466 00	128	1,503 50	5	1,442 00	124	1,484 76
Sonoma	9	1,670 00	257	1,386 23	9	1,549 47	265	1,409 74
Stanislaus	5	1,566 00	234	1,405 47	4	1,477 50	237	1,409 26
Sutter	2	1,575 00	50	1,276 11	2	1,475 00	51	1,335 00
Tehama	4	1,400 00	74	1,243 70	3	1,466 00	74	1,223 00
Trinity	5	1,188 00	21	1,189 28	3	1,230 00	23	1,198 04
Tulare	6	1,638 33	294	1,311 22	6	1,581 67	306	1,377 83
Tuolumne	1	1,450 00	49	1,243 35	2	1,235 00	48	1,271 56
Ventura	4	1,451 25	159	1,390 90	3	1,515 00	170	1,434 28
Yolo	2	1,307 50	73	1,317 90	------	----------	75	1,371 00
Yuba	1	1,200 00	52	1,325 50	1	1,200 00	48	1,355 11
Totals	351	*$1,669 88	15,219	*$1,600 63	420	*$1,699 16	16,344	*$1,574 57

*Average.

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No. 7-D.

Number of Supervisors and Average Annual Salaries.

Counties	School year 1922-1923				School year 1923-1924			
	Men		Women		Men		Women	
	No.	Average salary	No.	Average salary	No.	Average salary	No.	Average salary
Alameda	9	$2,791 11	22	$2,494 99	8	$2,685 88	23	$2,583 26
Alpine								
Amador								
Butte								
Calaveras					1	3,000 00		
Colusa								
Contra Costa								
Del Norte								
El Dorado								
Fresno			5	2,222 00				
Glenn								
Humboldt			3	1,900 00			2	1,825 00
Imperial								
Inyo								
Kern								
Kings								
Lake								
Lassen								
Los Angeles	26	2,927 30	71	2,601 30	32	2,750 57	88	2,684 88
Madera	1	1,200 00	3	1,633 33	1	2,200 00	3	1,633 33
Marin			4	1,927 06			4	1,666 77
Mariposa								
Mendocino								
Merced								
Modoc								
Mono								
Monterey								
Napa								
Nevada			2	1,950 00			1	2,100 00
Orange	2	2,187 50	2	1,400 00	1	1,975 00	2	2,300 00
Placer							2	1,500 00
Plumas	1	2,400 00					1	1,400 00
Riverside	1	2,600 00	3	2,066 66	1	2,800 00	2	2,200 00
Sacramento	2	2,430 00	4	2,850 00	2	2,478 00	5	2,868 00
San Benito								
San Bernardino	1	1,900 00	2	1,550 00				
San Diego	2	2,900 00	4	2,725 00	1	2,400 00	5	2,671 20
San Francisco	1	3,600 00	7	2,588 57	1	3,600 00	6	2,620 00
San Joaquin			5	2,392 70	1	2,340 00	5	2,265 31
San Luis Obispo							2	1,307 50
San Mateo								
Santa Barbara	1	2,200 00	1	2,200 00	1	2,200 00	1	2,200 00
Santa Clara	1	2,600 00	2	2,200 00	1	2,600 00	2	2,200 00
Santa Cruz	1	2,060 00	2	1,730 00	1	2,376 00	2	1,827 00
Shasta								
Sierra								
Siskiyou								
Solano								
Sonoma								
Stanislaus							3	2,700 00
Sutter								
Tehama			1	1,242 00				
Trinity								
Tulare								
Tuolumne								
Ventura								
Yolo								
Yuba								
Totals	49	*$2,767 85	143	*$2,438 36	52	*$2,691 38	159	*$2,432 80

*Average.

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No. 7-E.

Number of Special Teachers and Average Annual Salary.

Counties	School year 1922-1923				School year 1923-1924			
	Men		Women		Men		Women	
	No.	Average salary	No.	Average salary	No.	Average salary	No.	Average salary
Alameda	59	$2,043 53	81	$1,963 42	56	$2,110 39	109	$2,032 63
Alpine								
Amador			1	1,200 00			1	1,200 00
Butte	3	1,568 33	5	1,478 40	3	1,403 33	10	1,361 00
Calaveras								
Colusa			2	510 00	1	3,500 00		
Contra Costa	5	2,208 00	12	1,630 00	3	1,640 00	3	1,430 00
Del Norte			1	550 00			1	600 00
El Dorado	1	1,350 00			1	1,500 00	1	650 00
Fresno			2	1,575 00	1	1,600 00	5	2,290 00
Glenn			2	1,400 00			2	1,350 00
Humboldt			1	600 00	3	1,866 67	2	1,800 00
Imperial							4	1,706 00
Inyo			1	1,145 00			1	1,395 00
Kern	7	2,235 71	28	1,939 28	8	2,312.50	21	1,978 57
Kings	2	1,340 40	4	1,421 25	3	1,467 16	4	2,500 00
Lake							2	650 00
Lassen	2	1,110 00	1	1,260 00			1	1,440 00
Los Angeles	118	1,804 58	372	1,421 61	145	1,855 27	446	1,672 70
Madera								
Marin	2	1,702 00			2	1,927 65		
Mariposa								
Mendocino	1	1,665 00					1	1,600 00
Merced	1	2,000 00	1	1,800 00	1	2,000 00	2	1,750 00
Modoc								
Mono								
Monterey	1	1,800 00	2	1,560 00			4	1,560 00
Napa	1	1,800 00	2	1,250 00				
Nevada	1	2,100 00	1	2,100 00				
Orange	7	2,000 00	29	1,631 46	18	1,940 27	57	1,629 53
Placer			5	1,108 00				
Plumas			1	700 00				
Riverside	4	1,825 00	3	1,583 00	4	1,975 00	6	1,633 00
Sacramento	10	2,268 00	16	2,040 00	11	1,974 54	16	2,148 75
San Benito								
San Bernardino	5	1,850 00	13	1,463 92	7	1,400 00	14	1,545 00
San Diego	3	1,675 33	8	1,712 25	4	1,719 50	17	1,554 58
San Francisco	23	1,853 91	42	1,861 67	35	2,014 00	77	1,955 19
San Joaquin	9	2,275 12	10	2,101 99	7	2,216 42	6	2,310 00
San Luis Obispo	1	600 00	3	1,966 67	2	1,300 00	1	600 00
San Mateo	3	1,912 00	5	1,546 00	3	1,913 33	7	1,442 57
Santa Barbara	5	1,379 20	10	1,088 60	7	1,556 71	4	1,325 00
Santa Clara	9	1,534 52	14	2,389 81	8	1,969 43	12	1,895 05
Santa Cruz					1	2,040 00	1	1,620 00
Shasta								
Sierra								
Siskiyou								
Solano					1	2,200 00	5	1,488 00
Sonoma	2	2,310 00	2	1,950 00			1	1,500 00
Stanislaus	2	1,870 00	5	1,616 00	2	1,890 00	5	1,652 00
Sutter								
Tehama	1	600 00			1	760 00	1	1,260 00
Trinity								
Tulare	3	1,905 33	9	1,611 22	3	2,205 33	8	1,593 75
Tuolumne								
Ventura	2	1,555 75	6	1,479 17	1	2,550 00	8	1,540 63
Yolo	2	975 00	1	600 00	1	1,800 00	1	500 00
Yuba	2	1,483 32	3	1,550 00	2	2,000 00	3	1,750 00
Totals	297	*$1,868 80	704	*$1,587 40	345	*$1,911 17	870	*$1,742 08

*Average.

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No. 8-A.

State Enrollment Classified by Sex and by Counties.

Counties	1922-1923			1923-1924		
	Boys	Girls	Total boys and girls	Boys	Girls	Total boys and girls
Alameda	26,532	25,309	51,841	27,973	26,577	54,550
Alpine	27	20	47	23	11	34
Amador	605	570	1,175	587	557	1,144
Butte	2,667	2,411	5,078	2,806	2,425	5,231
Calaveras	457	427	884	479	411	890
Colusa	711	670	1,381	770	697	1,467
Contra Costa	4,856	4,741	9,597	5,179	4,944	10,123
Del Norte	294	287	581	338	289	627
El Dorado	555	485	1,040	578	496	1,074
Fresno	14,477	13,344	27,821	14,533	13,470	28,003
Glenn	1,009	931	1,940	992	938	1,930
Humboldt	3,226	3,019	6,245	3,310	3,170	6,480
Imperial	3,932	3,732	7,664	4,667	4,307	8,974
Inyo	573	526	1,099	536	491	1,027
Kern	5,962	5,620	11,582	6,185	5,910	12,095
Kings	2,539	2,320	4,859	2,502	2,323	4,825
Lake	426	426	852	416	454	870
Lassen	890	771	1,661	899	779	1,678
Los Angeles	94,635	93,339	187,974	116,411	114,653	231,064
Madera	1,516	1,379	2,895	1,587	1,463	3,050
Marin	2,172	1,943	4,115	2,333	1,977	4,310
Mariposa	253	193	446	251	205	456
Mendocino	2,131	1,972	4,103	2,155	1,889	4,044
Merced	2,924	2,732	5,656	3,004	2,859	5,863
Modoc	538	467	1,005	503	445	948
Mono	79	91	170	86	90	176
Monterey	2,286	2,155	4,441	2,391	2,136	4,527
Napa	1,369	1,173	2,542	1,287	1,161	2,448
Nevada	840	660	1,500	834	689	1,523
Orange	7,861	7,549	15,410	9,106	8,501	17,607
Placer	1,827	1,603	3,430	2,158	1,849	4,007
Plumas	391	378	769	444	406	850
Riverside	5,172	4,853	10,025	5,723	5,301	11,024
Sacramento	8,240	7,379	15,619	8,538	7,822	16,360
San Benito	780	731	1,511	881	777	1,658
San Bernardino	8,047	7,392	15,439	8,972	8,254	17,226
San Diego	9,257	8,900	18,157	10,142	9,617	19,759
San Francisco	30 004	26,827	56,831	31,434	27,951	59,385
San Joaquin	7,204	6,793	13,997	7,576	6 886	14,462
San Luis Obispo	2,119	1,929	4,048	2,130	1,891	4,021
San Mateo	3,805	3,494	7 299	4,162	3,661	7,823
Santa Barbara	3,447	3,064	6,511	3,629	3,346	6,975
Santa Clara	8,944	8,399	17,343	9,286	8,761	18,047
Santa Cruz	2,330	2,027	4,357	2,354	2,057	4,411
Shasta	1,228	1,194	2,422	1,235	1,180	2,415
Sierra	138	143	281	143	146	289
Siskiyou	1,932	1,697	3,629	1,917	1,865	3,782
Solano	2,448	2,148	4,596	2,406	2,088	4,494
Sonoma	5,013	4,462	9,475	4,963	4,426	9,389
Stanislaus	4,772	4,353	9,125	4,776	4,379	9,155
Sutter	889	827	1,716	981	892	1,873
Tehama	994	955	1,949	1,027	997	2,024
Trinity	215	190	405	195	176	371
Tulare	6,590	6,148	12,738	6,857	6,493	13,350
Tuolumne	753	724	1,477	690	696	1,386
Ventura	3,080	2,898	5,978	3,295	3,140	6,435
Yolo	1,428	1,240	2,668	1,516	1,278	2,794
Yuba	753	625	1,378	768	642	1,410
Totals	308,142	290,635	598.777	340,919	321,294	662,213

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No. 8-B.

State Enrollment (Including Post-Graduate Elementary Schools) Classified by Sex and by Grade.

	1922-1923	1923-1924
Enrolled in Elementary Schools.		
First Grade—		
Boys	62,818	70,929
Girls	57,827	65,398
Second Grade—		
Boys	40,981	43,737
Girls	37,370	39,754
Third Grade—		
Boys	40,263	44,513
Girls	37,367	41,653
Fourth Grade—		
Boys	38,482	42,408
Girls	36,392	39,605
Fifth Grade—		
Boys	34,854	40,247
Girls	32,923	38,360
Sixth Grade—		
Boys	31,868	35,388
Girls	30,069	33,648
Seventh Grade—		
Boys	30,176	33,308
Girls	29,363	31,475
Eighth Grade—		
Boys	28,700	30,389
Girls	29,275	31,358
Ungraded—		
Girls	49	43
Totals—		
Boys	308,142	340,919
Girls	290,635	321,294
Total boys and girls	598,777	662,213
Enrolled in Post-Graduate Elementary Schools.		
First year—		
Boys	53	32
Girls	68	38
Second year—		
Boys	9	7
Girls	9	11
Totals—		
Boys	62	39
Girls	77	49
Total boys and girls	139	88

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No. 9.

Average Daily Attendance: Number of Graduates (including Graduates from Post-Graduate Elementary Schools).

Counties	Number of graduates from								Average daily attendance	
	Elementary schools				Post-graduate elementary schools					
	1922-23		1923-24		1922-23		1923-24			
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	1922-23	1923-24
Alameda	2,417	2,523	1,852	1,880					42,988	45,932
Alpine	2	1							28	25
Amador	48	63	44	56					1,058	1,024
Butte	178	214	193	227					4,339	4,448
Calaveras	29	47	48	61					795	774
Colusa	46	75	62	67					1,272	1,326
Contra Costa	360	391	488	401					8,319	8,772
Del Norte	18	24	19	22					442	469
El Dorado	42	41	32	52	1				908	914
Fresno	1,012	1,079	1,012	922			2	1	24,080	23,850
Glenn	79	87	82	101					1,794	1,709
Humboldt	187	206	237	270					5,255	5,503
Imperial	218	190	191	216					5,567	6,138
Inyo	45	54	47	52					887	853
Kern	468	505	450	486					9,877	10,253
Kings	94	114	111	117					4,165	4,340
Lake	35	37	35	53					726	739
Lassen	55	48	48	58					1,330	1,427
Los Angeles	6,455	7,025	7,366	7,846					146,856	181,739
Madera	105	120	150	167					2,540	2,585
Marin	163	195	175	157					3,466	3,598
Mariposa	16	15	20	23					348	371
Mendocino	159	205	146	186					3,603	3,505
Merced	144	155	135	150					4,923	5,144
Modoc	36	52	24	19					828	789
Mono	1	8	3	3					129	126
Monterey	203	163	172	180					3,843	4,009
Napa	137	134	96	91					2,246	2,175
Nevada	68	73	102	72					1,332	1,337
Orange	530	459	529	601					12,604	14,371
Placer	137	130	132	142					2,954	3,145
Plumas	21	11	28	18					613	664
Riverside	334	364	393	387					7,934	8,524
Sacramento	676	651	641	722			3	3	12,517	13,352
San Benito	65	60	48	58					1,287	1,413
San Bernardino	486	513	716	702					12,328	13,645
San Diego	511	500	665	690	1	1	1		14,692	16,318
San Francisco	2,316	2,497	1,995	2,099					44,060	44,697
San Joaquin	484	557	533	602					11,828	12,426
San Luis Obispo	155	141	155	197					3,399	3,450
San Mateo	290	282	276	308					6,255	6,725
Santa Barbara	207	200	187	238					5,332	5,679
Santa Clara	659	670	658	667					14,835	15,287
Santa Cruz	196	205	129	141					3,835	3,750
Shasta	99	111	111	104					2,004	1,971
Sierra	9	8	5	11					233	231
Siskiyou	123	118	136	128					3,099	3,204
Solano	80	77	179	188				1	3,890	3,904
Sonoma	386	342	399	315					8,292	8,003
Stanislaus	398	386	251	284					7,850	7,989
Sutter	70	79	81	83					1,513	1,595
Tehama	107	94	73	116					1,709	1,760
Trinity	18	11	16	22					318	300
Tulare	529	514	557	576					11,010	11,343
Tuolumne	56	68	43	61					1,280	1,254
Ventura	172	175	168	195					4,802	5,091
Yolo	115	123	143	123					2,359	2,429
Yuba	68	67	52	61					1,245	1,244
Totals	22,117	23,267	22,639	23,774	2	1	6	5	488,051	537,638

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No. 10.

Average Number of Days Schools Were Open; Visits by School Officers; Books in School Libraries.

Counties	Average number of days school was maintained during year		Number of school visits by county superintendent		Number of school visits by school trustees		Number of volumes remaining in school library at close of the school year	
	1922-1923	1923-1924	1922-1923	1923-1924	1922-1923	1923-1924	1922-1923	1923-1924
Alameda	187	185	1,456	1,320	783	671	139,970	139,431
Alpine	171	163	6	6	4	3	1,377	770
Amador	182	175	91	85	104	83	16,131	13,694
Butte	176	174	213	184	267	293	26,135	16,532
Calaveras	187	180	96	79	76	156	21,439	20,611
Colusa	166	165	92	94	69	90	18,074	.....
Contra Costa	185	186	362	277	437	340	70,760	19,122
Del Norte	184	182	37	34	41	36	7,392	7,573
El Dorado	169	168	60	70	149	144	26,079	23,164
Fresno	172	171	1,761	1,872	1,066	1,175	35,208	47,262
Glenn	166	164	230	213	57	69	21,045	20,710
Humboldt	185	184	263	280	405	486	41,408	38,896
Imperial	169	167	289	199	230	243	.....	.....
Inyo	169	170	40	59	84	87	6,049	647
Kern	175	173	422	429	831	906	.....	39,386
Kings	170	171	177	313	217	220	.....	.....
Lake	170	168	39	44	71	80	9,228	9,397
Lassen	166	164	81	79	146	152	7,507	5,991
Los Angeles	185	183	7,229	5,590	2,457	2,500	744,269	921,663
Madera	167	167	124	110	102	171	.....	.....
Marin	187	186	465	570	205	222	57,998	62,441
Mariposa	168	168	33	45	72	96	11,069	11,162
Mendocino	172	169	78	220	100	312	18,959	57,153
Merced	167	168	251	276	414	523	44,011	33,116
Modoc	166	168	66	66	112	94	17,120	11,448
Mono	162	170	172	179	18	12	6,802	5,864
Monterey	188	187	169	189	256	202	43,587	10,323
Napa	181	182	73	100	140	108	17,722	.....
Nevada	180	178	74	62	104	119	31,741	33,023
Orange	171	172	443	427	410	541	68,717	56,461
Placer	177	173	181	157	179	258	37,671	62,630
Plumas	171	171	37	49	78	82	.....	.....
Riverside	170	169	166	214	392	441	48,430	47,595
Sacramento	179	181	100	245	256	349	12,143	38,596
San Benito	184	167	199	130	124	144	.....	5,733
San Bernardino	169	168	319	388	534	781	77,871	93,657
San Diego	184	185	432	814	707	673	169,346	108,480
San Francisco	194	202	3,058	4,382	971	607	188,911	199,153
San Joaquin	179	176	250	194	330	369	79,302	80,174
San Luis Obispo	174	171	182	179	292	360	51,020	41,040
San Mateo	188	189	304	292	308	378	44,861	46,766
Santa Barbara	186	187	199	216	326	341	27,392	26,463
Santa Clara	181	179	276	387	576	665	24,241	31,126
Santa Cruz	185	181	206	181	223	256	22,654	20,871
Shasta	164	167	96	161	136	306	34,082	47,331
Sierra	185	181	17	18	28	43	9,323	9,479
Siskiyou	171	169	190	151	351	311	20,628	44,776
Solano	180	180	120	176	77	255	20,209	37,226
Sonoma	182	178	243	209	571	674	185,960	182,327
Stanislaus	174	176	334	327	394	313	48,097	45,271
Sutter	166	163	109	107	73	54	6,271	9,647
Tehama	168	169	87	94	197	239	14,945	11,280
Trinity	167	167	29	30	70	68	10,244	10,244
Tulare	168	169	907	970	498	689	113,395	125,185
Tuolumne	73	177	151	67	61	75	4,791	.....
Ventura	180	180	245	214	213	268	25,643	10,346
Yolo	176	173	187	187	119	182	22,115	24,250
Yuba	170	173	61	57	80	75	17,640	14,640
Totals	181*	181*	23,577	24,067	17,591	19,390	2,826,982	2,980,126

*Average for state.

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No. 11-A.

Money Apportioned by the State to Counties for Elementary Schools Within the School Year Ending June 30 1923.

Counties	Apportioned Sept., 1922, on teacher basis at $700 per teacher	Apportioned Feb., 1923, on average daily attendance at $5 per unit	Total apportioned during school year 1922-1923
Alameda	$966,252	$213,390	$1,179,642
Alpine	2,100	130	2,230
Amador	38,612	5,295	43,907
Butte	119,700	21,265	140,965
Calaveras	37,121	4,440	41,561
Colusa	39,004	6,365	45,369
Contra Costa	203,448	41,190	244,638
Del Norte	14,700	2,160	16,860
El Dorado	42,413	4,380	46,793
Fresno	560,301	114,595	674,896
Glenn	55,230	8,910	64,140
Humboldt	159,600	26,335	185,935
Imperial	133,700	26,715	160,415
Inyo	32,900	4,500	37,400
Kern	255,500	48,380	303,880
Kings	103,131	20,045	123,176
Lake	27,531	3,460	30,991
Lassen	35,500	6,315	51,815
Los Angeles	2,881,263	635,485	3,516,748
Madera	71,477	12,140	83,617
Marin	92,778	17,545	110,323
Mariposa	20,251	1,750	22,001
Mendocino	123,900	17,690	141,590
Merced	126,868	23,590	150,458
Modoc	39,200	4,000	43,200
Mono	7,700	690	8,390
Monterey	122,850	19,195	142,045
Napa	71,400	11,320	82,720
Nevada	46,900	6,795	53,695
Orange	254,828	54,780	309,608
Placer	82,852	14,875	97,727
Plumas	25,900	3,245	29,145
Riverside	192,465	37,465	229,930
Sacramento	289,177	59,180	348,357
San Benito	43,085	6,240	49,325
San Bernardino	276,654	56,585	333,239
San Diego	348,481	68,825	417,306
San Francisco	998,900	222,630	1,221,530
San Joaquin	287,357	58,715	346,072
San Luis Obispo	109,900	17,420	127,320
San Mateo	141,400	29,005	170,405
Santa Barbara	132,426	24,935	157,361
Santa Clara	342,818	71,425	414,243
Santa Cruz	102,347	18,870	121,217
Shasta	88,900	10,275	99,175
Sierra	11,900	1,260	13,160
Siskiyou	108,500	15,245	123,745
Solano	106,687	20,030	126,717
Sonoma	229,222	40,560	269,782
Stanislaus	192,759	39,455	232,214
Sutter	43,400	7,110	50,510
Tehama	64,519	8,855	73,374
Trinity	19,600	1,655	21,255
Tulare	275,401	53,250	328,651
Tuolumne	40,880	6,020	46,900
Ventura	120,183	22,935	143,118
Yolo	63,329	11,340	74,669
Yuba	43,400	6,365	49,765
Totals	$11,478,600	$2,296,620	$13,775,220

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No. 11-B.

Money Apportioned by the State to Counties for Elementary Schools Within the School Year Ending June 30, 1924.

Counties	Apportioned Sept., 1923, on teacher basis at $600 per teacher	Apportioned Feb., 1924, on teacher basis at $100 per unit	Apportioned Feb., 1924, on average daily attendance at $5.19 per unit	Total apportioned during school year 1923-1924
Alameda	$831,942	$138,657	$223,107 72	$1,193,706 72
Alpine	1,800	300	145 32	2,245 32
Amador	31,284	5,214	5,491 02	41,989 02
Butte	102,000	17,000	22,519 41	141,519 41
Calaveras	30,516	5,086	4,126 05	39,728 05
Colusa	33,930	5,655	6,601 68	46,186 68
Contra Costa	173,658	28,943	43,175 61	245,776 61
Del Norte	12,600	2,100	2,293 98	16,993 98
El Dorado	36,594	6,099	4,712 52	47,405 52
Fresno	499,506	83,251	124,975 20	707,732 20
Glenn	46,608	7,768	9,310 86	63,686 86
Humboldt	138,000	23,000	27,273 45	188,273 45
Imperial	118,200	19,700	28,892 73	166,792 73
Inyo	27,600	4,600	4,603 53	36,803 53
Kern	219,600	36,600	51,261 63	307,461 63
Kings	89,406	14,901	21,616 35	125,923 35
Lake	24,198	4,033	3,767 94	31,998 94
Lassen	41,400	6,900	6,902 70	55,202 70
Los Angeles	2,849,976	474,996	762,182 64	4 087,154 64
Madera	63,072	10,512	13,182 60	86,766 60
Marin	78,990	13,165	17,988 54	110,143 54
Mariposa	16,758	2,793	1,806 12	21,357 12
Mendocino	109,800	18,300	18,699 57	146,799 57
Merced	110,796	18,466	25,550 37	154,812 37
Modoc	31,800	5,300	4,297 32	41,397 32
Mono	6,600	1,100	669 51	8,369 51
Monterey	107,574	17,929	19,945 17	145,448 17
Napa	59,262	9,877	11,656 74	80,795 74
Nevada	38,400	6,400	6,913 08	51,713 08
Orange	250,890	41,815	65,414 76	358,119 76
Placer	71,442	11,907	15,331 26	98,680 26
Plumas	21,600	3,600	3,181 47	28,381 47
Riverside	173,268	28,878	41,177 46	243,323 46
Sacramento	261,000	43,500	64,963 23	369,463 23
San Benito	37,110	6,185	6,679 53	49,974 53
San Bernardino	255,732	42,622	63,982 32	362,336 32
San Diego	316,800	52,800	76,251 48	445,851 48
San Francisco	847,200	141,200	228,671 40	1,217,071 40
San Joaquin	247,800	41,300	61,387 32	350,487 32
San Luis Obispo	93,000	15,500	17,640 81	126,140 81
San Mateo	129,000	21,500	32,463 45	182,963 45
Santa Barbara	119,454	19,909	27,673 08	167,036 08
Santa Clara	303,864	50,644	76,993 65	431,501 65
Santa Cruz	90,852	15,142	19,903 65	125,897 65
Shasta	75,000	12,500	10,400 76	97,900 76
Sierra	9,000	1,500	1,209 27	11,709 27
Siskiyou	92,400	15,400	16,083 81	123,883 81
Solano	87,948	14,658	20,189 10	122,795 10
Sonoma	203,610	33,935	43,035 48	280,580 48
Stanislaus	164,928	27,488	40,741 50	233,157 50
Sutter	39,600	6,600	7,852 47	54,052 47
Tehama	53,028	8,838	8,869 71	70,735 71
Trinity	16,800	2,800	1,650 42	21,250 42
Tulare	246,960	41,160	57,297 60	345,417 60
Tuolumne	36,174	6,029	6,643 20	48,846 20
Ventura	107,280	17,880	24,922 38	150,082 38
Yolo	56,790	9,465	12,243 21	78,498 21
Yuba	36,600	6,100	6,461 55	49,161 55
Totals	$10,377,000	$1,729,500	$2,532,984 69	$14,639,484 69

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No. 12-A.

Receipts by Elementary School Districts in Each County from All Sources, Within the School Year Ending June 30, 1923.

Counties	Balance on hand June 30, 1922	Total receipts from state	Total receipts from county	Total receipts from district taxes			Miscellaneous sources	Total receipts
				Taxes for maintenance	Special taxes for building	Sale of bonds		
Alameda	$1,749,268 04	$1,189,135 01	$1,285,486 79	$777,760 98	$253,928 07	$240,000 00	$201,840 02	$5,688,418 91
Alpine	4,355 34	2,230 00	2,280 00				752 33	9,617 67
Amador	23,474 27	43,874 84	40,232 66	5,741 59			6,253 86	119,577 22
Butte	67,754 49	140,855 00	159,582 23	54,349 11	26,426 67	46,661 00	3,822 79	499,451 29
Calaveras	33,801 75	41,562 01	49,372 20				125 60	124,861 56
Colusa	66,697 27	45,369 00	55,480 23	31,852 23	6,805 06	45,000 00	3,261 77	254,465 56
Contra Costa	459,459 94	244,638 00	332,262 66	157,855 20	19,380 05	415,270 01	10,628 33	1,630,494 19
Del Norte	8,272 19	16,764 00	32,534 97	2,214 24			2,295 06	62,080 46
El Dorado	24,966 56	46,793 00	47,614 00	2,109 76			999 80	122,483 12
Fresno	586,226 97	674,846 00	697,755 00	336,350 16	304,224 64	129,000 00	96,202 66	2,824,605 43
Glenn	53,588 72	64 140 00	77,505 00	25,333 48	2,496 31	14,387 00	1,058 68	238,509 19
Humboldt	146,198 97	185,935 00	193,175 00	36,599 63	29,827 36	7,000 00	15,220 68	613,956 64
Imperial	218,641 89	160,415 00	200,487 50	106,267 98	44,816 06	105,600 00	41,723 02	877,951 45
Inyo	27,370 61	37,400 00	38,540 00	16,325 84	1,021 95		4,144 49	124,802 89
Kern	667,235 96	303,880 00	521,741 00	337,769 91	220,453 57	411,000 00	45,441 64	2,507,522 08
Kings	119,348 21	123,176 00	127,185 00	55,955 53	17,971 74	105,000 00	6,403 15	555,039 63
Lake	83,869 81	30,980 70	33,713 30	8,905 93			6,279 17	163,748 91
Lassen	70,335 83	51,815 00	58,130 00	16,005 80	37,267 19		7,278 61	240,832 43
Los Angeles	6,584,397 76	3,516,928 16	5,159,593 65	3,628,903 65	842,232 35	9,381,500 00	2,628,539 38	31,742,194 95
Madera	70,115 35	84,102 60	88,230 20	44,303 25	13,319 23	80,000 00	11,583 74	391,654 37
Marin	64,604 26	111,773 00	111,773 00	52,252 18	23,108 60	137,000 00	6,742 74	507,253 78
Mariposa	12,117 16	22,878 20	24,212 83				1,927 37	61,135 56
Mendocino	305,310 62	141,535 00	148,589 00	17,544 02	4,100 32	43,266 60	9,518 35	663,863 91
Merced	95,557 92	150,458 00	150,093 66	52,658 38	52,202 22	37,000 00	1,307 71	539,277 89
Modoc	17,827 97	42,500 00	42,445 00	5,226 23		2,626 50	1,287 50	111,913 20
Mono	7,594 89	8,425 00	18,435 60		1,481 87		1,600 30	37,537 66
Monterey	189,426 42	142,030 00	147,789 00	53,622 18	27,319 19	10,000 00	12,469 08	582,655 87
Napa	201,508 14	82,720 00	84,017 85	50,439 73	3,890 29	45,000 00	3,905 21	471,481 22
Nevada	19,398 88	52,970 00	54,775 55	6,543 31			5,406 09	139,093 83
Orange	416,418 78	309,608 00	452,036 00	380,444 96	129,618 12	871,048 00	66,574 19	2,625,748 05
Placer	58,982 91	97,727 00	101,189 45	19,890 97	9,112 82	11,500 00	3,289 29	301,692 44
Plumas	23,161 60	29,145 00	33,672 24	11,327 81	4,121 15		3,348 40	104 776 21

Riverside	122,250 82	229,930 00	225,946 00	102,742 52	34,915 94	295,000 00	9,896 05	1,020,681 33
Sacramento	718,593 45	348,357 00	544,834 60	233,080 68	79,699 33	523,500 00	8,318 06	2,456,383 12
San Benito	24,068 15	49,325 00	49,647 82	26,891 55	20,000 00	----------	89 24	170,021 76
San Bernardino	349,402 33	333,239 00	351,843 40	153,819 54	76,294 44	384,000 00	12,236 35	1,660,835 06
San Diego	301,828 33	417,306 00	444,836 00	228,761 47	110,951 09	90,680 00	52,619 90	1,646 982 79
San Francisco	2,014,753 93	1,221,530 00	2,486,966 44	----------	421,203 70	----------	168,219 18	6,312,673 25
San Joaquin	895,964 22	346,072 00	444,872 40	173,143 92	76,672 71	35,000 00	11,122 06	1,982,847 31
San Luis Obispo	99,780 43	127,275 00	126,694 65	48,363 99	54,794 98	39,000 00	3,595 83	499,504 88
San Mateo	235,241 02	170,405 00	180,465 70	84,572 86	25,163 34	178,000 00	6,407 28	880,255 20
Santa Barbara	268,090 54	157,921 00	182,886 00	103,051 00	52,642 00	100,000 00	5,117 29	869,707 83
Santa Clara	706,776 36	414,243 00	449,961 23	233,354 32	13,218 57	359,000 00	42,197 54	2,218,751 02
Santa Cruz	68,696 39	121,209 80	122,626 99	45,372 67	15,673 30	11,803 00	918 32	386,390 47
Shasta	76,883 54	98,919 20	101,133 40	1,718 00	----------	111,600 00	11,990 67	402,244 81
Sierra	13,375 26	13,160 00	17,192 43	4,193 30	----------	----------	----------	47,920 99
Siskiyou	84,749 80	123,670 00	126,704 00	9,075 02	16,598 74	----------	15,485 80	376,283 36
Solano	72,785 41	126,717 00	137,933 80	41,464 66	19,618 76	100,000 00	4,940 05	503,159 68
Sonoma	132,041 77	269,777 00	260,968 00	102,185 08	----------	323,500 00	7,061 67	1,095,533 52
Stanislaus	196,934 20	232,214 00	262,525 09	100,667 71	61,482 95	221,014 00	8,513 96	1,083,351 91
Sutter	56,017 68	50,509 50	48,426 40	21,686 01	12,422 87	55,000 00	839 04	244,901 50
Tehama	39,788 82	73,374 00	76,495 50	18,583 21	3,842 84	62,424 50	13,548 08	288,056 95
Trinity	7,713 14	21,255 00	20,573 00	854 51	----------	----------	1,452 25	51,847 90
Tulare	553,964 02	329,324 60	345,281 44	150,741 57	43,998 67	191,000 00	41,534 58	1,655,844 88
Tuolumne	26,617 35	46,900 00	57,412 60	1,283 59	448 23	----------	1,435 60	134,097 37
Ventura	258,376 11	143,118 00	168,346 50	61,251 84	35,054 87	44,500 00	13,267 78	723,915 10
Yolo	55,183 20	74,569 00	77,422 56	14,256 65	3,893 21	125,000 00	645 85	350,970 47
Yuba	25,285 68	49,765 00	56,130 00	27,098 06	----------	----------	310 00	158,588 74
Totals	$19,873,451 43	$13,777,783 62	$17,929,056 52	$8,276,767 77	$3,253,815 37	$15,387,880 61	$3,652,993 44	$82,151,748 76

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No 12-B.

Receipts by Elementary School Districts in Each County from All Sources, Within the School Year Ending June 30, 1924.

Counties	Balance on hand at beginning of school year	Amount received from state apportionments	Amount received from county apportionments	Amount received from district taxes for maintenance	Amount received from district taxes for building	Amount received from sale of bonds	Amount received from miscellaneous sources excluding transfers	Transfers from other districts in county	Transfers from other counties	Total receipts including balance from previous school year
Alameda	$880,578 29	$1,193,706 72	$1,315,158 62	$1,262,116 06	$346,214 14	$175,000 00	$208,213 54	$6,330 74	$665 03	$5,387,983 14
Alpine	3,989 91	2,245 32	2,100 00				245 72			8,580 95
Amador	24,185 02	42,024 84	42,357 56	4,517 31			3,499 28	2,873 11		119,497 12
Butte	42,918 37	141 562 80	147,203 50	73,051 88	44,876 42		1,349 83	7,718 39		458,681 19
Calaveras	42,792 59	39,728 32	46,294 00	2,848 69			721 64	8,879 09		141,264 33
Colusa	34,114 16	46,096 67	59,584 05	27,523 23	2,953 39		1,599 75			171,871 25
Contra Costa	384,118 82	245,776 61	337,036 38	165,171 29	60,477 93	22,000 00	80,365 40			1,294,946 43
Del Norte	16,310 39	17,471 00	25,849 00	2,782 37			2,025 38	900 00		65,338 14
El Dorado	27,717 58	47,405 52	50,865 00	773 97			1,745 14			128,507 21
Fresno	411,262 53	707,732 20	727,237 00	313,387 55	150,964 49	89,500 00	29 622 92	2,853 77	33,566 62	2,466,127 08
Glenn	55,442 64	63,686 86	70,522 00	21,474 00	94 75	6,500 00	4,140 58	1,450 00		223,310 83
Humboldt	132,458 59	188,273 45	196,993 45	47,254 86	23,902 83	49,226 00	30,530 64	4,783 12		673,422 94
Imperial	119,486 09	166,792 73	200,656 21	115,249 94	61,358 41	77,000 00	25,236 83	15,350 00		781,130 21
Inyo	22,283 64	36,803 53	38,398 00	13,836 55	2,525 91	14,500 00	635 13	3,542 95		132,525 71
Kern	418,391 84	307,461 63	534,034 00	321,312 03	237,836 62	56,000 00	16,774 87	6,272 25		1,898,083 24
Kings	136,727 31	126,067 36	129,297 00	51,143 39	45,339 26		988 60	3,080 00	1,904 16	494,547 08
Lake	34,658 05	31,997 82	33,538 18	7,471 27			4,379 37	1,066 16		113,111 85
Lassen	24,042 59	55,181 94	58,908 00	14,438 28	22,898 02		3,340 63			178,809 46
Los Angeles	8,843,695 32	4,059,232 00	5,901,998 83	4,089,716 27	1,671,200 19	8,370,800 00	1,541,565 00	565,824 66		35,044,032 27
Madera	15,600 71	85,984 00	92,578 00	62 256 68		20,000 00	44,148 56	2,224 50		322,792 45
Marin	131,355 99	110,893 54	114,740 80	53,868 67	16,535 12		3,518 68			430,912 80
Mariposa	14,833 56	21,274 52	22 979 03	487 95			1,995 78			61,570 84
Mendocino	229 466 50	146,768 00	149,640 00	20,687 49	3,817 22	21,500 00	7,428 17	1,482 12		580,791 50
Merced	76,178 15	154,212 37	152,784 05	86,194 09	25,439 85	45,000 00	1,594 30	2,708 74	843 72	544,955 27
Modoc	22,531 54	41,397 32	44,765 98	8,765 44	257 10		3,341 71	145 89		121,204 98
Mono	13,126 59	8,483 66	9,570 50				1,931 44	1,300 00		34,412 19
Monterey	108,837 40	145,411 84	145,411 84	67,699 19	38,634 04	185,000 00	10,601 82	1,400 00		702,996 13
Napa	70,568 59	80,795 74	84,974 10	54,047 63		5,000 00	26,437 34	1,682 75	1,679 38	325,185 53
Nevada	12,387 45	51,737 94	54,857 55	11,366 08			804 21	3,507 85		134,661 08
Orange	835,862 24	355,725 00	519,613 00	355,712 88	144,204 34	603,500 00	21,968 71			2,836,586 17
Placer	47,118 52	98,680 26	92,019 32	21,889 96	4,958 86	57,277 00	2,390 98	977 25		325,312 15
Plumas	25,928 37	28,381 47	36,290 12	6,778 29	2,625 59		2,089 10	3,280 14		105,373 08

Riverside	264,424 34	243,323 46	241,595 00	106,680 28	46,784 69	20,000 00	24,044 98	10,000 00		956,852 75
Sacramento	485,985 79	369,708 13	598,649 50	300,265 31	109,778 79	17,000 00	18,950 90	4,400 00	300 00	1,905,038 42
San Benito	34,630 50	50,174 53	51,076 70	8,884 93	14,760 16		275 83			159,802 65
San Bernardino	537,523 52	362,287 00	381,846 00	182,592 38	38,246 61	14,500 00	22,768 51	3,076 52		1,542,840 54
San Diego	328,720 71	445,851 48	472,444 00	248,614 74	120,461 80	465,550 00	69,395 88	3,052 16	26,066 15	2,180,156 92
San Francisco	1,128,320 97	1,217,071 40	2,168,243 71	475,481 12	170,250 01	19,640 00	181,770 54			5,360,777 75
San Joaquin	274,689 50	350,487 32	471,251 20	156,460 21	54,475 46	47,000 00	48,077 44			1,402,441 13
San Luis Obispo	80,554 57	125,470 00	125,344 07	55,005 12	57,640 72		3,681 40	9 78		447,705 66
San Mateo	189,782 70	182,963 45	192,013 10	90,217 18	30,357 85	66,000 00	8,078 97			759,443 25
Sant Barbara	124,870 29	167,036 08	218,238 00	118,153 73	32,798 00	316,000 00	2,656 79	803 49		980,556 38
Santa Clara	509,690 66	431 501 65	465,770 50	235,588 73	37,701 86	312,000 00	8,747 65	2,791 82		2,003,792 87
Santa Cruz	44,665 43	125,897 65	130,998 20	46,760 23	19,877 23	23,500 00	10,262 67			401,961 41
Shasta	78,315 14	97,842 80	112,146 00	5,049 17	200 83	7,000 00	5,171 52	4,038 90		309,764 36
Sierra	14,930 70	11,709 27	16,456 41	2,075 15	1,194 48		799 11			47,165 12
Siskiyou	77,075 57	123,883 81	138,790 00	16,804 89	23,327 81		5,808 70	4,510 54		390,201 32
Solano	131,261 13	122,795 10	145,396 00	46,798 95	20,984 80	50,000 00	2,433 51	4 65		519,774 14
Sonoma	371,738 69	280,580 48	280,580 48	85,297 35		25,000 00	3,091 61	6,097 45		1,052,386 06
Stanislaus	295,575 09	233 157 50	256,145 67	103,427 97	33,120 62	57,019 30	3,680 12	50 40	200 00	982,376 67
Sutter	18,264 87	54,052 47	55,278 00	31,532 20	11,669 67		2,087 70	2,542 63		175,427 54
Tehama	50,093 98	70,735 71	78,451 00	21,424 95	3,013 58	36,816 64	949 14	4,527 11	3,245 70	269,257 81
Trinity	10,720 74	21,250 42	22,060 42	998 66		600 00	707 00	336 97		56,674 21
Tulare	372,649 70	345,528 00	354,410 00	151,995 35	52,118 14	28,000 00	3,555 53	3,258 35	1,320 07	1,312,835 14
Tuolumne	36,410 06	48,846 20	59,566 66	2,404 13	23 99		287 32			147,538 36
Ventura	141,437 67	150,065 50	171,580 00	94,804 21	47,745 64	236,000 00	21,786 23	1,596 62		865,015 87
Yolo	86,678 27	78,498 21	83,711 60	26,838 39	11,521 92	22,000 00	23,593 35			332,841 74
Yuba	34,408 31	49,625 00	51,806 57	26,171 85	6,561 00		4,884 51	4 00		173,461 24
Totals	$18,982,488 24	$14,609,335 60	$18,782,144 86	$9,924,182 47	$3,851,730 14	$11,561,428 94	$2,562,777 96	$700,734 87	$69,790 83	$81,044,613 91

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No 13-A.

Expenditures of Elementary Schools in Each County for all Purposes for the School Year Ending June 30, 1923.

County	General control	Teachers' salaries	Other expenses of instruction	Library	Operation of school plant	Maintenance of school	Fixed charge	Capital outlays	Auxiliary expenses	Total expenditures (including transfers)	Balance on hand
Alameda	$66,755 88	$2,639,936 85	$200,011 49	$37,800 53	$273,990 09	$125,938 39	$23,806 35	$1,367,539 20	$86,145 95	$4,821,924 73	$866,494 18
Alpine	.....	3,945 00	462 55	206 64	323 50	542 22	.....	147 85	.....	5,627 76	9,989 91
Amador	6 50	68,575 65	3,645 37	1,968 33	6,864 80	4,901 11	218 57	2,505 91	6,705 96	95,392 20	24,185 02
Butte	8,740 75	266,839 26	13,539 98	6,059 27	39,052 67	16,894 21	2,851 02	76,213 83	10,765 06	443,956 05	46,495 24
Calaveras	6 50	67,325 16	4,159 38	1,602 05	3,840 38	2,211 94	438 05	2,466 51	19 00	82,068 97	42,792 59
Colusa	.....	85,264 69	7,871 67	2,065 02	10,479 43	10,142 61	1,592 99	96,832 68	5,393 28	219,642 37	34,823 19
Contra Costa	9,017 44	557,195 49	9,604 86	12,119 97	68,760 74	47,142 20	7,313 91	516,625 03	18,595 91	1,246,375 55	384,118 64
Del Norte	12 00	28,735 80	2,767 64	684 83	2,522 48	2,851 68	485 78	1,569 11	384 60	40,113 92	21,966 54
El Dorado	79 38	77,232 72	3,890 70	2,000 77	5,195 62	3,400 12	448 85	2,293 58	223 80	94,765 54	27,717 58
Fresno	28,290 89	1,326,218 05	89,281 52	23,371 17	168,558 46	58,248 21	25,325 72	661,369 69	32,679 19	2,413,342 90	411,262 53
Glenn	404 16	110,365 11	5,081 72	2,386 48	15,416 03	10,750 59	1,555 64	33,739 96	3,366 86	183,066 55	55,442 64
Humboldt	3,373 43	334,575 54	17,573 33	8,115 60	36,054 17	13,628 78	2,621 05	56,713 74	5,328 47	477,984 11	135,972 53
Imperial	17,686 67	351,895 98	17,085 76	7,224 99	41,292 59	14,064 65	12,107 65	263,281 19	33,825 88	758,465 36	119,486 09
Inyo	323 82	56,586 31	3,958 01	1,145 06	9,384 51	5,234 85	1,089 48	17,364 31	7,448 30	102,534 65	22,268 24
Kern	26,910 37	713,000 22	50,234 94	16,997 79	114,746 68	84,922 77	22,107 90	929,533 18	130,890 34	2,089,344 19	418,177 89
Kings	576 12	216,150 62	10,275 09	7,116 50	34,753 73	7,402 33	5,144 73	132,347 10	4,530 10	418,296 32	136,743 31
Lake	110 01	48,678 42	2,565 64	1,121 18	3,866 51	3,130 16	1,699 60	60,266 80	7,652 54	129,090 86	34,658 05
Lassen	125 80	100,772 93	10,664 88	3,075 00	10,184 34	2,871 65	7,003 15	79,420 65	2,882 49	217,000 89	23,831 54
Los Angeles	454,846 59	9,409,419 21	1,178,552 63	120,074 13	1,008,082 33	445,646 61	259,129 77	9,859,070 98	172,416 19	22,898,239 41	8,843,955 54
Madera	31 61	154,916 37	19,693 05	3,968 16	22,726 69	14,548 16	3,850 28	142,491 28	14,173 52	376,399 12	15,255 25
Marin	10,893 82	205,078 25	6,648 27	3,754 13	27,272 38	4,726 22	3,643 55	107,267 71	2,419 11	371,703 44	135,550 34
Mariposa	61 10	35,694 45	5,615 12	650 62	2,132 70	1,141 88	203 80	855 16	131 50	46,486 33	14,649 23
Mendocino	618 88	230,289 62	10,157 16	7,609 42	24,512 88	11,123 25	2,293 75	141,517 93	6,274 52	434,397 41	229,466 50
Merced	1,371 02	263,130 78	16,190 19	8,729 98	32,710 05	19,823 45	4,701 19	97,358 71	19,098 88	463,114 25	76,163 64
Modoc	33 65	67,732 96	4,281 43	1,615 41	7,299 57	4,345 65	611 26	3,255 17	206 56	89,381 66	22,531 54
Mono	18 10	16,067 44	843 24	467 44	1,037 99	624 53	126 00	4,743 33	582 60	24,510 67	13,026 99
Monterey	5,584 02	263,582 49	11,495 07	7,520 05	28,373 54	16,652 95	2,991 39	121,114 25	16,504 71	473,818 47	108,837 40
Napa	566 50	143,751 16	8,325 42	1,383 95	16,707 61	7,600 14	2,455 77	209,420 93	9,018 40	399,229 88	72,251 34
Nevada	2,691 47	88,164 32	3,625 44	1,727 21	9,256 12	7,302 36	1,060 57	9,856 38	1,314 44	124,998 31	14,095 52
Orange	14,603 48	746,849 98	71,123 94	20,492 97	114,717 05	56,975 00	11,254 34	690,693 29	62,175 75	1,788,885 80	836,862 25
Placer	179 80	169,703 38	12,767 65	4,084 49	21,676 94	4,597 34	2,324 61	33,795 14	5,511 57	254,640 92	47,051 52
Plumas	44 60	53,632 12	5,854 16	1,852 46	6,440 25	1,450 84	369 20	5,938 29	1,223 39	76,805 31	27,970 89

Riverside	7,997 56	424,674 79	15,071-32	8,182 59	54,660 01	31,839 84	8,199 23	176,503 81	26,719 67	753,848 82	266,832 51
Sacramento	20,257 04	905,055 59	39,016 15	12,317 50	89,112 51	58,629 58	9,282 24	809,298 41	27,428 31	1,970,397 33	485,985 79
San Benito	145 45	87,854 29	3,535 74	1,963 69	14,090 16	7,764 42	2,059 11	17,753 93	224 56	135,391 35	34,630 41
San Bernardino	11,693 19	593,281.98	38,786 05	12,410 88	103,875 39	28,837 26	18,724 19	285,878 46	29,824 14	1,123,311 54	537,523 52
San Diego	16,780 66	851,214 75	37,443 51	13,063 37	104,165 78	47,030 52	13,039 41	200,346 42	34,977 66	1,318,062 08	328,920 71
San Francisco	122,823 66	2,931,428 83	294 51	24,545 07	323,042.27	223,554 38	243,139 25	914,275 16	63,303 49	4,846,406 62	1,466,266 63
San Joaquin	17,249 28	721,269 94	31,673 73	13,581 24	88,948 12	30,597 29	11,863 33	782,569 45	10,919 00	1,708,671 38	274,175 93
San Luis Obispo	1,361 23	242,012 29	10,937 53	5,703 53	24,940 53	14,079 27	3,382 84	103,989 29	12,543 74	418,950 31	80,554 57
San Mateo	1,089 70	337,567 97	15,088 39	5,449 53	43,292 98	24,418 09	9,585 48	246,182 69	7,797 67	690,472 50	189,782 70
Santa Barbara	11,285 36	317,988 23	32,501 69	5,305 75	44,991 07	20,462 24	4,903 00	295,794 08	11,606 12	744,837 54	124,870 29
Santa Clara	9,841 82	830,754 24	20,477 02	20,707 09	97,066 64	27,228 91	10,278 55	676,720 18	15,468 85	1,708,543 30	510,207 72
Santa Cruz	6,189 61	218,837 37	9,176 71	4,883 08	28,212 64	11,404 27	2,307 26	54,692 74	6,021 36	341,725 04	44,665 43
Shasta	279 10	158,799 35	12,200 93	3,952 69	15,110 83	21,520 83	1,928 85	106,754 89	3,382 23	323,929 70	78,315 11
Sierra	26 35	23,758 25	1,231 76	810 66	2,354 75	2,993 40	88 40	1,374 19	402 50	33,040 26	14,880 73
Siskiyou	552 80	208,999 78	8,248 46	7,670 00	20,021 05	13,322 68	1,704 70	34,073 33	4,615 00	299,207 80	77,075 56
Solano	5,750 78	248,945 07	9,120 55	5,499 98	27,695 40	10,626 66	3,453 36	58,143 90	2,862 85	372,098 55	131,361 13
Sonoma	1,521 45	423,564 00	46,631 82	8,181 64	41,037 49	25,871 87	3,658 59	162,921 17	9,750 93	723,138 96	372,394 56
Stanislaus	2,702 63	473,378 16	23,959 16	11,444 42	64,872 48	30,844 44	5,869 21	149,030 97	25,675 35	787,776 82	295,575 09
Sutter	134 98	87,935 42	4,640 55	2,985 00	11,306 91	7,163 42	2,600 43	103,592 47	3,999 01	224,358 19	20,543 31
Tehama	895 12	127,780 31	6,163 92	534 00	16,271 61	7,925 61	1,718 94	64,383 73	8,972 01	234,645 25	53,411 70
Trinity	111 22	32,843 00	1,369 19	810 00	2,471 23	971 36	296 25	1,745 01	509 90	41,127 16	10,720 74
Tulare	10,990 85	588,609 37	24,948 37	16,176 81	82,838 86	44,096 78	12,716 63	471,655 40	31,162 11	1,283,195 18	372,649 70
Tuolumne	20 00	77,290 55	3,255 40	1,093 21	7,139 02	3,593 11	306 25	2,838 84	730 00	96,266 38	37,830 99
Ventura	17,890 10	288,421 71	15,500 37	5,751 79	31,387 43	13,588 32	4,846 16	193,621 18	11,565 37	582,572 43	141,342 67
Yolo	16 50	127,418 20	8,189 50	2,412 20	15,449 28	6,368 99	2,665 85	99,781 58	1,990 10	264,292 20	86,678 27
Yuba	373 24	89,125 98	6,119 83	2,735 08	9,533 17	7,934 11	1,401 01	3,867 90	4,067 82	125,158 14	33,430 60
Totals	$921,944 01	$30,323,115 75	$2,233,439 46	$517,162,46	$3,532,120 44	$1,733,504 50	$790,835 44	$21,736,498 05	$1,024,408 62	$62,813,028 73	$19,338,720 03

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Totals.....

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SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No. 13-C.

Valuation of School Property, and Total Bonded Indebtedness as of June 30, 1923, and June 30, 1924.

Counties	Lots and school houses		Library books		Laboratories, furniture, apparatus and equipment		Total		Total outstanding bonded debt	
	1922-1923	1923-1924	1922-1923	1923-1924	1922-1923	1923-1924	1922-1923	1923-1924	1922-1923	1923-1924
Alameda	$11,823,531	$12,396,635	$123,502	$135,097	$654,192	$797,122	$12,601,225	$13,328,854	$5,695,125	$5,622,375
Alpine	3,700	3,500	1,310	1,320	1,200	1,200	6,210	6,120		
Amador	91,003	94,418	14,574	16,612	21,856	22,868	127,433	133,898		
Butte	784,930	783,202	14,592	7,137	84,294	87,385	883,816	877,724	291,200	272,200
Calaveras	71,875	69,800	8,970	8,325	14,140	15,975	94,985	94,100		
Colusa	279,950	278,850	7,090	6,910	32,670	32,665	319,710	317,925	166,500	160,000
Contra Costa	2,610,875	3,166,525	21,565	23,225	149,175	180,805	2,781,615	3,370,555	1,665,900	1,624,250
Del Norte	21,250	23,700	4,280	4,300	5,200	5,600	30,730	33,600		
El Dorado	93,300	92,820	8,777	8,832	9,726	10,079	111,803	111,731	33,000	32,000
Fresno	5,013,525	5,104,850	33,435	38,995	794,794	817,330	5,841,754	5,961,175	3,021,500	2,981,875
Glenn	531,150	537,950	10,915	20,710	27,105	28,555	569,170	587,215	348,000	340,400
Humboldt	537,105	606,736	12,525	14,485	58,460	73,680	608,090	694,901	40,000	35,500
Imperial	1,561,502	1,561,502	2,100	2,100	152,531	152,531	1,716,133	1,716,133	1,263,150	1,215,200
Inyo	154,880	168,300	1,485	1,065	10,199	12,350	166,564	181,715	121,750	
Kern	3,365,393	3,315,279	33,265	34,133	330,328	449,965	3,728,986	3,799,377	1,495,600	1,525,500
Kings	956,995	1,030,075	8,330	8,945	106,166	111,300	1,071,491	1,150,320	552,200	509,650
Lake	117,875	117,450	4,860	4,850	17,955	18,700	140,690	141,000	94,000	91,000
Lassen	224,575	227,025	4,495	3,440	30,510	37,645	259,580	268,110	136,362	135,431
Los Angeles	38,017,318	48,924,221	502,477	594,469	3,382,094	4,497,807	41,901,889	53,926,497	28,076,670	35,425,220
Madera	577,225	512,600	300		72,425	93,150	649,950	605,750	360,775	338,050
Marin	686,900	759,400	19,900	24,700	24,300	29,150	731,100	813,250	443,750	395,650
Mariposa	43,275	42,325	7,950	7,895	9,180	9,250	60,405	59,470	7,500	6,100
Mendocino	334,450	511,300	29,050	25,910	39,550	59,910	403,050	597,120	269,175	270,375
Merced	731,500	744,850	13,520	13,650	102,963	106,185	847,983	864,685	386,430	401,110
Modoc	108,400	115,785	5,430	5,155	15,122	16,463	128,952	137,403	27,400	22,100
Mono	8,925	11,725	1,525	1,400	2,000	2,250	12,450	15,375		
Monterey	696,604	730,929	6,150	10,050	79,970	92,900	782,724	833,879	375,250	429,000
Napa	464,875	467,575	7,085	5,050	39,565	40,965	511,525	513,590	315,100	445,300
Nevada	137,700	137,200	12,975	12,775	32,356	32,206	183,031	182,181		
Orange	2,523,200	3,349,800	24,075	24,075	109,750	117,200	2,657,025	3,491,075	2,073,000	2,713,000
Placer	285,100	333,100	4,880	5,730	25,655	51,150	315,635	389,980	183,750	222,700
Plumas	70,355	72,260	2,010	2,232	19,737	21,868	92,102	96,360	11,000	10,500

Riverside	1,130,915	1,226,175	24,750	22,075	120,360	116,035	1,276,025	1,364,285	941,990	927,305
Sacramento	3,802,553	4,122,825	14,330	16,480	384,060	404,930	4,200,943	4,544,235	3,948,600	3,877,900
San Benito	306,781	306,781	5,030	5,030	14,265	14,265	326,076	326,076	184,925	174,000
San Bernardino	2,140,691	2,478,148	36,439	41,750	199,827	211,000	2,376,057	2,730,898	1,250,250	2,107,900
San Diego	2,352,335	3,233,934	43,010	166,995	349,820	300,090	2,745,165	3,701,019	1,132,305	1,586,460
San Francisco	12,994,500	13,298,000	119,000	121,000	860,000	910,000	13,973,500	14,329,000	4,659,600	9,037,100
San Joaquin	3,128,003	3,270,960	42,814	39,665	177,771	174,500	3,348,588	3,485,125	2,071,750	1,937,200
San Luis Obispo	526,985	704,545	15,655	13,050	44,125	51,820	586,765	769,415	349,890	327,840
San Mateo	1,099,100	1,371,700	14,400	14,500	56,700	69,400	1,170,200	1,455,600	701,850	788,350
Santa Barbara	1,238,525	1,238,525	21,582	21,582	128,660	128,660	1,388,767	1,388,767	848,500	936,425
Santa Clara	2,731,466	3,399,588	22,950	33,245	221,866	292,538	2,976,282	3,725,371	1,751,600	1,991,300
Santa Cruz	611,915	621,335	10,925	8,760	39,867	44,692	662,707	674,787	149,710	164,090
Shasta	228,100	266,390	22,785	22,150	22,780	25,135	273,665	313,675	120,550	120,500
Sierra	36,825	36,825	4,014	3,989	5,339	5,364	46,178	46,178	----------	----------
Siskiyou	328,801	388,899	2,845	4,305	49,040	63,485	380,686	456,689	131,650	116,150
Solano	604,900	719,750	16,070	17,580	96,210	105,680	717,180	843,010	445,080	478,620
Sonoma	826,975	827,975	46,800	46,800	83,307	83,507	957,082	958,282	622,458	523,883
Stanislaus	1,967,450	2,067,800	23,005	23,005	152,770	152,770	2,143,225	2,243,575	1,270,650	1,231,000
Sutter	364,110	326,550	2,900	3,615	30,934	36,950	397,944	367,115	208,100	198,800
Tehama	331,650	329,650	----------	----------	46,050	45,350	377,700	375,000	132,934	156,884
Trinity	27,720	28,770	1,140	1,140	6,080	6,215	34,940	36,125	416	619
Tulare	2,087,700	2,452,100	32,000	29,500	165,650	191,650	2,285,350	2,673,250	1,440,879	1,410,540
Tuolumne	89,150	92,925	5,950	5,950	9,590	12,575	104,690	111,450	20,750	20,750
Ventura	926,100	1,014,240	7,680	3,000	61,860	73,900	995,640	1,091,140	455,400	662,500
Yolo	601,820	613,320	12,860	15,820	44,280	46,160	658,960	675,300	376,640	377,750
Yuba	189,470	189,470	8,035	9,610	18,935	19,210	216,440	218,290	16,200	12,600
Totals	$113,603,781	$130,918,767	$1,510,366	$1,674,168	$9,845,314	$11,612,090	$124,959,461	$144,205,025	$70,686,764	$84,394,852

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No. 14.

Average Cost per Pupil in Average Daily Attendance in Each County (Exclusive of Capital Outlays and Transfers).

Counties	Average cost per pupil	
	1922-1923	1923-1924
Alameda	$82 73	$83 85
Alpine	195 71	184 69
Amador	85 65	86 21
Butte	83 83	89 20
Calaveras	100 28	114 06
Colusa	94 82	108 33
Contra Costa	86 97	83 40
Del Norte	85 02	98 06
El Dorado	99 20	101 92
Fresno	70 95	75 76
Glenn	81 79	91 22
Humboldt	78 80	78 78
Imperial	87 00	77 21
Inyo	93 61	90 63
Kern	116 33	116 44
Kings	67 58	71 27
Lake	93 86	102 34
Lassen	103 44	93 39
Los Angeles	88 85	83 88
Madera	91 94	85 77
Marin	74 67	76 85
Mariposa	116 38	123 42
Mendocino	81 22	87 57
Merced	72 08	69 50
Modoc	100 85	121 48
Mono	146 77	180 53
Monterey	89 65	96 88
Napa	82 53	91 52
Nevada	86 44	84 02
Orange	86 51	85 40
Placer	73 10	66 07
Plumas	113 25	110 87
Riverside	71 87	69 13
Sacramento	92 76	89 28
San Benito	91 40	91 43
San Bernardino	67 54	67 31
San Diego	75 79	82 33
San Francisco	89 24	92 24
San Joaquin	77 34	77 13
San Luis Obispo	90 98	91 69
San Mateo	70 56	69 39
Santa Barbara	83 05	79 26
Santa Clara	68 80	69 81
Santa Cruz	74 36	83 02
Shasta	105 97	108 23
Sierra	133 69	118 43
Siskiyou	83 43	84 79
Solano	80 71	77 96
Sonoma	66 76	73 83
Stanislaus	81 36	78 05
Sutter	77 91	75 92
Tehama	97 54	96 94
Trinity	122 75	138 72
Tulare	72 16	72 95
Tuolumne	73 25	74 63
Ventura	79 29	81 1[illegible]
Yolo	69 82	74 12
Yuba	97 50	95 25
	*$82 56	*$81 24

*Average for state, exclusive of transfers.

SECTION IV.

STATISTICS OF SECONDARY (HIGH) SCHOOLS.

Table No. 15-A. Number of High Schools, Number of Teachers, Kinds of Certificates, for the School Year Ending June 30, 1923.

Table No. 15-B. Number of High Schools, Number of Teachers, Kinds of Certificates, for the School Year Ending June 30, 1924.

Table No. 16-A. State Enrollment in All High School Departments and Classes and in High School Junior Colleges, Classified by Sex and by County, for the School Year Ending June 30, 1923.

Table No. 16-B. State Enrollment in All High School Departments and Classes and in High School Junior Colleges, Classified by Sex and by County, for the School Year Ending June 30, 1924.

Table No. 16-C. State Enrollment in All High School Departments and Classes, in High School Junior Colleges and Post-Graduate High School Classes, Classified by Sex and by Grade, for the School Years Ending June 30, 1923, and June 30, 1924.

Table No. 17. Average Number of Days Schools Were Open, Average Daily Attendance, and Number of Graduates, for the School Years Ending June 30, 1923, and June 30, 1924.

Table No. 18-A. Money Apportioned by the State to the Secondary Schools of the Respective Counties During the School Years Ending June 30, 1923, and June 30, 1924.

Table No. 18-B. Receipts by High School Districts in each County from All Sources During the School Year Ending June 30, 1923.

Table No. 18-C. Receipts by High School Districts in each County from All Sources During the School Year Ending June 30, 1924.

Table No. 18-D. Expenditures of High Schools in each County for All Purposes for the School Year Ending June 30, 1923.

Table No. 18-E. Expenditures of High Schools in each County for All Purposes for the School Year Ending June 30, 1924.

Table No. 18-F. Valuation of Property, Outstanding Bonded Debt, and Books in High School Libraries as of June 30, 1923.

Table No. 18-G. Valuation of Property, Outstanding Bonded Debt, and Books in High School Libraries as of June 30, 1924.

Table No. 19. Rate of County High School Tax, and Average Cost per Pupil Exclusive of Capital Outlays, for the School Years Ending June 30, 1923, and June 30, 1924.

Table No. 20-A. Number of Principals and Teachers, and Average Annual Salaries, for the School Year Ending June 30, 1923.

Table No. 20-B. Number of Principals and Teachers, and Average Annual Salaries, for the School Year Ending June 30, 1924.

SECTION IV. STATISTICS OF SECONDARY SCHOOLS.

TABLE 15-A.

Number of High Schools, Number of Teachers, Kinds of Certificates, for the School Year Ending June 30, 1923.

Counties	No. of high schools	Number of teachers employed								Total number employed	Kinds of certificates		
		In regular high schools				In junior college departments							
		Full time		Partial time		Full time		Partial time					
		Men	Women	Men	Women	Men	Women	Men	Women		Regular secondary	Special secondary	Junior high
Alameda	25	219	436	63	85					803	429	374	
Alpine													
Amador	3	6	13							19	12	7	
Butte	5	30	41	2	2					75	50	25	
Calaveras	2	3	7		1					11	8	3	
Colusa	5	15	19		2					36	21	15	
Contra Costa	8	33	75	3	9					120	84	36	
Del Norte	1	1	4	1						6	5	1	
El Dorado	1	6	6	1						13	10	3	
Fresno	22	136	194	105	140					575	249	326	
Glenn	4	12	21	1	1					35	24	11	
Humboldt	4	22	45	2	2					71	48	23	
Imperial	6	34	38							72	32	40	
Inyo	4	6	13	1	2					22	16	6	
Kern	5	48	89	1	3					132	79	53	
Kings	3	20	26	1	3					50	31	19	
Lake	5	11	14	4	1					30	19	11	
Lassen	2	5	15							20	20		
Los Angeles	62	861	1,770	82	133					2,846	1,611	1,235	
Madera	3	13	21	4	5					43	32	11	
Marin	3	16	28	8	7					59	34	25	
Mariposa	1	1	3							4	4		
Mendocino	9	18	31	2	2					53	38	15	
Merced	6	17	39	1	2					59	43	16	
Modoc	3	8	13	1						22	17	5	
Mono													
Monterey	5	26	36		1					63	46	17	
Napa	3	13	18		4					35	27	8	
Nevada	3	8	12							20	16	4	
Orange	8	89	140	3	8				1	241	152	89	
Placer	3	17	28	1	3				1	50	28	22	
Plumas	1	3	5	1	1					10	8	2	
Riverside	11	62	83	2	9					156	106	50	
Sacramento	6	66	120	4	3					193	99	94	
San Benito	1	6	14							20	17	3	
San Bernardino	10	70	95	18	29					212	123	87	2
San Diego	12	81	141	37	44					303	144	159	
San Francisco	9	193	288	14	12					507	325	182	
San Joaquin	7	59	81	6	17					163	86	77	
San Luis Obispo	6	18	36	5	8					67	46	21	
San Mateo	6	35	50	4	4					93	61	32	
Santa Barbara	6	34	51	4	8					97	63	34	
Santa Clara	9	69	147	27	28					271	172	99	
Santa Cruz	3	24	39	4	4					71	47	24	
Shasta	3	12	15		1					28	21	7	
Sierra	1	5	2							7	6	1	
Siskiyou	7	18	21	1	2					42	32	10	
Solano	6	21	40		2					63	47	16	
Sonoma	8	44	71	4						119	76	43	
Stanislaus	8	40	81	9	18					148	91	57	
Sutter	3	11	15							26	18	8	
Tehama	3	12	22	4						38	24	14	
Trinity	1	4	3							7	6	1	
Tulare	10	61	85	7	8					161	95	66	
Tuolumne	2	4	10		1					15	11	4	
Ventura	6	23	38	3	2					66	47	19	
Yolo	3	12	23		1					36	27	9	
Yuba	2	10	15							25	17	8	
Totals	364	2,691	4,777	441	618				2	8,529	5,000	3,527	2

SECTION IV. STATISTICS OF SECONDARY SCHOOLS.

TABLE No. 15-B.

Number of High Schools, Number of Teachers, Kinds of Certificates, for the School Year Ending June 30, 1924.

Counties	No. of high schools	Number of teachers employed									Kinds of certificates		
		In regular high schools				In junior college departments				Total number employed	Regular secondary	Special secondary	Junior high
		Full time		Partial time		Full time		Partial time					
		Men	Women	Men	Women	Men	Women	Men	Women				
Alameda	36	223	485	74	100					882	477	399	6
Alpine													
Amador	3	7	12							19	14	5	
Butte	5	33	38	2	2					75	53	22	
Calaveras	2	5	7							12	10	2	
Colusa	5	17	19		2					38	25	13	
Contra Costa	8	40	88	1	9					138	106	32	
Del Norte	1	3	3	1	1					8	5	3	
El Dorado	1	6	6	1						13	7	6	
Fresno	22	155	211	24	36					426	213	196	17
Glenn	4	12	23	1						36	28	8	
Humboldt	4	31	43							74	53	21	
Imperial	6	43	51	2	1					97	54	43	
Inyo	4	6	16	1						23	20	3	
Kern	5	56	79	2	5					142	84	57	1
Kings	3	21	29		3					53	33	20	
Lake	5	10	15	4	1					30	19	11	
Lassen	2	7	14	2	1					24	18	6	
Los Angeles	70	1,016	2,138	99	133					3,386	1,882	1,445	59
Madera	3	11	23	1	1					36	27	9	
Marin	3	19	32	7	9					67	42	25	
Mariposa	1	1	3							4	4		
Mendocino	9	22	37	2	2					63	50	13	
Merced	6	21	47		2					70	39	25	6
Modoc	3	9	13							22	17	5	
Mono													
Monterey	5	29	39		1					69	48	21	
Napa	3	13	24		3					40	29	11	
Nevada	3	9	13							22	18	4	
Orange	8	88	147	5	5					245	147	98	
Placer	3	19	28	1	2					50	35	15	
Plumas	3	3	8	1						12	10	2	
Riverside	11	49	82	20	18					169	107	61	1
Sacramento	6	67	126	5	10					208	129	79	
San Benito	1	7	13							20	18	2	
San Bernardino	9	78	106	15	21					220	123	96	1
San Diego	13	90	156	34	40	5	1	3		329	163	147	19
San Francisco	9	209	285	9	10					513	327	183	3
San Joaquin	7	61	87	4	16					168	101	67	
San Luis Obispo	7	25	33	4	7					69	44	25	
San Mateo	7	45	57	3	4					109	68	41	
Santa Barbara	8	38	56	5	7	2	1	1		110	66	41	3
Santa Clara	9	75	156	24	24					279	171	108	
Santa Cruz	3	29	44	2	4					79	55	24	
Shasta	3	13	16	1	2					32	21	11	
Sierra	4	4	4							8	7	1	
Siskiyou	8	17	25	1	2					45	35	9	1
Solano	6	22	40	1	2					65	49	16	
Sonoma	8	50	81	3	7		1			142	89	44	9
Stanislaus	8	52	91	3	4					150	90	60	
Sutter	3	12	19		1					32	23	9	
Tehama	3	14	23	3						40	23	17	
Trinity	1	2	5							7	4	3	
Tulare	10	64	88	4	5					161	97	64	
Tuolumne	2	5	11	2	1					19	13	6	
Ventura	7	29	41	2	2					74	55	19	
Yolo	3	14	24	1	1					40	31	9	
Yuba	2	8	18	1						27	18	9	
Totals	394	3,014	5,378	378	507	7	3	4		9,291	5,494	3,671	126

SECTION IV. STATISTICS OF SECONDARY SCHOOLS.

SABLE No. 16-A.

State Enrollment in All High School Departments, and Classes in High School Junior Colleges, Classified by Sex and by County, for the School Year Ending June 30, 1923.

Counties	Regular high schools		Special day and evening classes		Compulsory part-time classes		Junior college classes		Evening schools		Grand totals		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Total, male and female
Alameda	6,927	7,049	53	240	1,625	1,229			4,961	5,070	13 566	13,588	27,154
Alpine													
Amador	129	117		20							129	137	266
Butte	669	732	147	224	32	39	15	11			863	1,006	1,869
Calaveras	98	90									98	90	188
Colusa	178	198	14	44							192	242	434
Contra Costa	937	1,095	1,758	433	179	154					2,874	1,682	4,556
Del Norte	28	53									28	53	81
El Dorado	87	99			18	15					105	114	219
Fresno	3,076	3,200	4 408	3,340	362	322	203	218			8,049	7,080	15,129
Glenn	289	290	1	7	1	3					291	300	591
Humboldt	554	677	87	55	111	71	21	19	137	171	910	993	1,903
Imperial	572	563	487	337			23	11	448	468	1,530	1,379	2,909
Inyo	133	136	15	111							148	247	395
Kern	1,199	1,229	491	650	12	17	55	59	614	380	2,371	2,335	4,706
Kings	392	435	465	205	2	8					859	648	1,507
Lake	172	197									172	197	369
Lassen	130	180									130	180	310
Los Angeles	21,666	23,235	1,720	3,190	3,398	2,272	39	57	28,191	21,117	55,014	49,871	104,885
Madera	272	320	198	20	13	5					483	345	828
Marin	492	481	117	51	2						611	532	1,143
Mariposa	19	13					4		41	37	19	13	32
Mendocino	414	466	16	14					143	117	475	517	992
Merced	438	495									581	612	1,193
Modoc	102	135									102	135	237
Mono	4	3									4	3	7
Monterey	484	501	173	230	35	35	5	11	98	30	795	807	1,602
Napa	325	369			41	38			85	81	451	488	939
Nevada	185	212			3	2					188	214	402
Orange	2,169	2,433	353	255	38	36					2,560	2,724	5,284
Placer	364	346	162	45	19	38					545	429	974
Plumas	44	49									44	49	93

Riverside	1,115	1,251	160	126	49	91					1,324	1,468	2,792
Sacramento	1,671	2,052		1,509	336	215			786	530	2,793	4,306	7,099
San Benito	139	195	83	39			31	28			253	262	515
San Bernardino	1,805	1,895	173	476	77	95			1,067	880	3,122	3,346	6,468
San Diego	2,175	2,216	31	1,140	183	152	150	134	2,243	2,782	4,782	6,424	11,206
San Francisco	4,390	5,083			1,706	950			3,261	1,389	9,357	7,422	16,779
San Joaquin	1,321	1,491	1,750	1,714	375	320					3,446	3,525	6,971
San Luis Obispo	392	534	33	38	24	6					449	578	1,027
San Mateo	704	722	345	142	49	34			430	525	1,528	1,423	2,951
Santa Barbara	637	702	182	169	94	73	63	46	343	409	1,319	1,399	2,718
Santa Clara	2,217	2,237	2,236	2,808	291	280	89	79	170	77	5,003	5,481	10,484
Santa Cruz	662	625	91	144	71	37					824	816	1,640
Shasta	184	289	41	75							225	364	589
Sierra	14	19	2	2							16	21	37
Siskiyou	252	311	139	10							391	321	712
Solano	498	552	32	48	23	26					553	626	1,179
Sonoma	1,044	1,135	10	142	146	105	23	22	511	461	1,734	1,865	3,599
Stanislaus	1,172	1,269	410	289	57	53					1,639	1,611	3,250
Sutter	166	158									166	158	324
Tehama	262	307			8	1					270	308	578
Trinity	24	40									24	40	64
Tulare	1,456	1,550	758	484	53	29			62	38	2,329	2,101	4,430
Tuolumne	134	149									134	149	283
Ventura	520	551	425	519							945	1,070	2,015
Yolo	296	325									296	325	621
Yuba	197	211	95	63							292	274	566
Totals	65,995	71,277	17,661	19,408	9,433	6,751	721	695	43,591	34,562	137,401	132,693	270,094

SECTION IV. STATISTICS OF SECONDARY SCHOOLS.

TABLE No. 16-B.

State Enrollment in All High School Departments and Classes, and in High School Junior Colleges, Classified by Sex and by County, for the School Year Ending June 30, 1924.

Counties	Regular high schools		Special day and evening classes		Compulsory part-time classes		Junior college classes		Evening schools		Grand totals		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Total, male and female
Alameda	8,026	8,225	71	829	1,581	1,125			5,133	4,724	14,811	14,903	29,714
Alpine													
Amador	112	123	8	37	6	1					126	161	287
Butte	703	765	121	178	49	62	34	8	11	35	918	1,048	1,966
Calaveras	96	105									96	105	201
Colusa	175	225	10	57							185	282	467
Contra Costa	1,042	1,208	1,118	728	225	187			300	154	2,685	2,277	4,962
Del Norte	32	55									32	55	87
El Dorado	86	90									86	90	176
Fresno	3,079	3,344	1,948	1,659	389	386	263	226	2,066	1,334	7,745	6,949	14,694
Glenn	278	298	2	4	2	2					282	304	586
Humboldt	642	750	114	64	110	56	18	24	246	169	1,130	1,063	2,193
Imperial	618	557	696	499			26	27			1,340	1,083	2,423
Inyo	133	144	2	27					121	132	256	303	559
Kern	1,228	1,292	1,400	672	15	9	34	58	100	110	2,777	2,141	4,918
Kings	433	504	552	256	6	2					991	762	1,753
Lake	138	167	31	42							169	209	378
Lassen	129	161									129	161	290
Los Angeles	25,893	27,802	2,708	2,790	4,250	2,966	41	57	33,681	27,354	66,573	60,969	127,542
Madera	286	313	128	20							414	333	747
Marin	530	645	193	160	2						725	805	1,530
Mariposa	31	28									31	28	59
Mendocino	433	513	75	51							508	564	1,072
Merced	465	532	138	259							603	791	1,394
Modoc	109	137		11							109	148	257
Mono	1	3									1	3	4
Monterey	478	485	430	474	37	26	4	1			949	986	1,935
Napa	346	385			26	35			27	61	399	481	880
Nevada	186	228									186	228	414
Orange	2,418	2,390	528	426							2,946	2,816	5,762
Placer	342	375	253	149	33	3					628	527	1,155
Plumas	56	57									56	57	113

Riverside	1,131	1,286	241	526	67	85			131	7	1,570	1,904	3,474
Sacramento	1,674	2,023	117	1,858	480	288			784	523	3,055	4,692	7,747
San Benito	153	218					31	86			184	304	488
San Bernardino	1,881	1,994	1,428	1,587	297	325					3,606	3,906	7,512
San Diego	2,479	2,493	66	1,360	205	160	158	148	2,099	2,568	5,007	6,729	11,736
San Francisco	4,909	5,547	44	758	1,380	1,015			3,685	1,553	10,018	8,873	18,891
San Joaquin	1,470	1 660		558	331	237			1,002	1,333	2,803	3,788	6,591
San Luis Obispo	447	521	5	14	15	13			12	19	479	567	1,046
San Mateo	921	919	328	27	45	34			544	488	1,838	1,468	3,306
Santa Barbara	707	791	107	112	120	73	81	63	585	553	1,600	1,592	3,192
Santa Clara	2,376	2,362	2,586	3,013	335	397	79	68			5,376	5,840	11,216
Santa Cruz	636	689	63	219	96	66					795	974	1,769
Shasta	226	324	12	38							238	362	600
Sierra	24	34	9	10							33	44	77
Siskiyou	285	315	292	192							577	507	1,084
Solano	510	540	131	57	33	49					674	646	1,320
Sonoma	1,188	1,196	90	40	147	118	45	38	656	818	2,126	2,210	4,336
Stanislaus	1,198	1,344	331	217	87	65					1,616	1,626	3,242
Sutter	211	214	1	1							212	215	427
Tehama	316	343	23	70	8	3					347	416	763
Trinity	25	25									25	25	50
Tulare	1,536	1,611	753	245	36	33					2,325	1,889	4,214
Tuolumne	142	166									142	166	308
Ventura	619	634	918	496		285					1,537	1,415	2,952
Yolo	298	349									298	349	647
Yuba	205	247	62	123							267	370	637
Totals	74,091	79,751	18,133	20,913	10,413	8,106	814	804	51,183	41,935	154,634	151,509	306,143

SECTION IV. STATISTICS OF SECONDARY SCHOOLS.

TABLE No. 16-C.

State Enrollment in All High School Departments and Classes, in High School Junior Colleges and Post-graduate High School Classes, Classified by Sex and by Grade, for the School Years Ending June 30, 1923, and June 30, 1924.

	1922-1923	1923-1924
Enrolled in Regular Day High Schools.		
First year—		
Male	26,493	29,123
Female	27,333	30,088
Second year—		
Male	17,491	19,987
Female	18,908	21,187
Third year—		
Male	12,126	13,802
Female	13,342	15,491
Fourth year—		
Male	8,915	10,140
Female	10,335	11,750
Specials—		
Male	970	1,039
Female	1,359	1,235
Totals—		
Male	65,995	74,091
Female	71,277	79,751
Totals, male and female	137,272	153,842
Enrolled in Special Day and Evening Classes.		
Male	17,661	18,133
Female	19,408	20,913
Enrolled in Compulsory Part-Time Classes.		
Male	9,433	10,413
Female	6,751	8,106
Totals in special and part-time classes	53,253	57,565
Enrolled in Junior College Departments.		
First year—		
Male	518	545
Female	536	579
Second year—		
Male	203	269
Female	159	225
Totals—		
Male	721	814
Female	695	804
Totals, male and female	1,416	1,618
Enrolled in Evening High Schools.		
Male	43,591	51,183
Female	34,562	41,935
Totals, male and female	78,153	93,118
Grand Total High School Enrollment, including Regular Day High Schools, Special Day, Evening and Part-time Classes, Junior College Departments and Evening High Schools.		
Male	137,401	154,634
Female	132,693	151,509
Total, male and female	270,094	306,143
Enrolled in Post-graduate High School Classes.		
Male	15	18
Female	47	19
Totals, male and female	62	37

SECTION IV. STATISTICS OF SECONDARY SCHOOLS.

TABLE NO. 17.

Average Number of Days Schools Were Open, Average Daily Attendance, and Number of Graduates, for the School Year Ending June 30, 1923, and June 30, 1924.

Counties	Average number of days schools were open		Average daily attendance		Total number of graduates					
					1922-23			1923-1924		
	1922-23	1923-24	1922-23	1923-24	Boys	Girls	Totals	Boys	Girls	Totals
Alameda	187	185	13,010	14,494	774	961	1,735	920	1,073	1,993
Alpine	------	------	------	------	------	------	------	------	------	------
Amador	183	181	226	215	20	23	43	19	10	29
Butte	180	179	1,192	1,271	98	106	204	86	110	196
Calaveras	187	182	160	171	18	17	35	12	15	27
Colusa	180	180	322	342	32	29	61	20	45	65
Contra Costa	187	186	1,776	2,007	89	105	194	123	160	283
Del Norte	195	186	66	72	6	10	16	3	11	14
El Dorado	175	177	173	158	2	17	19	14	12	26
Fresno	176	176	5,846	5,837	293	388	681	328	393	721
Glenn	187	182	497	482	43	51	94	28	44	72
Humboldt	188	187	1,184	1,272	53	92	145	81	107	188
Imperial	172	169	1,048	1,101	61	71	132	69	79	148
Inyo	179	178	239	243	18	26	44	17	29	46
Kern	177	175	2,098	2,280	123	133	256	139	152	291
Kings	169	172	737	823	49	55	104	57	83	140
Lake	169	169	263	276	18	22	40	19	27	46
Lassen	182	182	248	242	10	29	39	14	25	39
Los Angeles	185	184	41,760	50,279	2,371	2,945	5,316	2,778	3,428	6,206
Madera	177	177	512	492	30	38	68	28	39	67
Marin	187	187	925	1,087	64	66	130	72	85	157
Mariposa	189	173	25	48	2	2	4	5	1	6
Mendocino	171	174	750	794	54	75	129	60	81	141
Merced	177	176	831	891	55	51	106	60	68	128
Modoc	187	182	206	210	14	23	37	23	25	48
Mono	149	167	5	3	------	------	------	------	------	------
Monterey	185	183	912	926	69	63	132	57	87	144
Napa	185	182	634	619	40	48	88	45	56	101
Nevada	178	181	350	369	32	44	76	31	40	71
Orange	177	178	3,482	3,832	248	341	589	270	326	596
Placer	175	178	607	635	47	46	93	46	58	104
Plumas	186	186	88	93	5	3	8	6	6	12
Riverside	168	169	2,048	2,116	166	175	341	171	195	366
Sacramento	184	186	3,003	3,226	143	210	353	147	180	327
San Benito	182	179	329	337	19	37	56	20	19	39
San Bernardino	170	168	3,181	3,387	250	288	538	253	310	563
San Diego	185	186	4,559	5,121	197	289	486	279	332	611
San Francisco	194	202	9,209	9,973	506	666	1,172	516	631	1,147
San Joaquin	180	177	2,601	2,791	121	192	313	166	216	382
San Luis Obispo	169	172	791	817	47	102	149	67	94	161
San Mateo	187	181	1,317	1,566	73	72	145	95	107	202
Santa Barbara	187	188	1,365	1,579	92	105	197	103	131	234
Santa Clara	175	179	4,290	4,598	270	325	595	281	310	591
Santa Cruz	182	185	1,131	1,166	79	117	196	96	98	194
Shasta	179	176	404	462	19	37	56	29	48	77
Sierra	181	177	45	54	2	------	2	1	9	10
Siskiyou	185	184	468	530	33	50	83	44	47	91
Solano	182	185	887	904	56	78	134	67	99	166
Sonoma	176	178	2,027	2,238	117	142	259	140	176	316
Stanislaus	176	177	2,146	2,164	180	216	396	130	181	311
Sutter	172	174	280	351	17	8	25	13	20	33
Tehama	177	178	497	555	31	56	87	44	49	93
Trinity	191	188	50	43	3	7	10	2	1	3
Tulare	170	171	2,664	2,771	198	189	387	224	244	468
Tuolumne	175	175	234	256	20	11	31	26	28	54
Ventura	187	183	956	1,107	69	91	160	76	89	165
Yolo	185	174	534	571	39	59	98	40	53	93
Yuba	174	179	341	372	19	33	52	28	38	66
Totals	183	183	125,529	140,619	7,504	9,435	16,939	8,488	10,380	18,868

SECTION IV. STATISTICS OF SECONDARY SCHOOLS.

TABLE No. 18-A.

Money Apportioned by the State to the Secondary Schools of the Respective Counties During the School Years Ending June 30, 1923, and June 30, 1924.

Counties	Apportioned September, 1922	Apportioned February, 1923	Total apportionment 1922-1923	Apportioned September, 1923	Apportioned February, 1924	Total apportionment 1923-1924
Alameda	$30,890	$273,964 80	$304,764 80	$33,000	$315,738 30	$348,738 30
Alpine						
Amador	6,600	5,212 80	11,812 80	6,600	5,479 58	12,079 58
Butte	11,000	25,783 84	36,783 84	11,000	29,113 36	40,113 36
Calaveras	4,400	2,713 28	7,113 28	4,400	3,652 89	8,052 89
Colusa	11,000	8,397 44	19,397 44	11,000	8,641 63	19,641 63
Contra Costa	15,400	37,276 96	52,676 96	15,950	47,846 08	63,796 08
Del Norte	2,200	1,423 36	3,623 36	2,200	1,506 78	3,706 78
El Dorado	2,200	3,963 04	6,163 04	2,200	3,949 59	6,149 59
Fresno	36,850	124,905 28	161,755 28	40,700	149,990 58	190,690 58
Glenn	6,600	9,416 16	16,016 16	7,700	11,061 61	18,761 61
Humboldt	8,800	26,220 80	35,020 80	8,800	30,510 72	39,310 72
Imperial	13,200	27,682 88	41,182 88	13,200	27,985 84	41,185 84
Inyo	8,800	5,826 56	14,626 56	8,800	6,016 37	14,816 37
Kern	11,000	47,350 40	58,350 40	11,000	53,012 80	64,012 80
Kings	6,600	16,386 08	22,986 08	6,600	18,998 17	25,598 17
Lake	8,250	5,386 08	13,636 08	10,450	6,564 29	17,014 29
Lassen	4,400	4,572 48	8,972 48	4,400	5,296 56	9,696 56
Los Angeles	94,600	814,849 12	909,449 12	98,450	1,000,660 80	1,099,110 80
Madera	6,600	9,780 96	16,380 96	6,600	12,628 96	19,228 96
Marin	6,600	20,513 28	27,113 28	6,600	22,363 03	28,963 03
Mariposa	2,200	622 72	2,822 72	2,200	570 75	2,770 75
Mendocino	19,800	15,852 16	35,652 16	19,800	17,602 50	37,402 50
Merced	13,200	18,453 92	31,653 92	13,200	21,187 76	34,387 76
Modoc	6,600	4,959 52	11,559 52	6,600	4,908 45	11,508 45
Mono					114 15	114 15
Monterey	11,000	20,832 16	31,832 16	11,000	23,560 96	34,560 96
Napa	6,600	13,425 12	20,025 12	6,600	15,879 69	22,479 69
Nevada	6,600	7,766 08	14,366 08	6,600	8,230 50	14,830 50
Orange	15,950	73,085 28	89,035 28	17,600	83,814 06	101,414 06
Placer	6,600	13,055 84	19,655 84	6,600	15,137 81	21,737 81
Plumas	2,200	1,423 36	3,623 36	2,200	1,963 38	4,163 38
Riverside	24,200	45,879 52	70,079 52	24,200	49,015 84	73,215 84
Sacramento	11,000	63,670 24	74,670 24	11,550	71,724 72	83,274 72
San Benito	2,200	7,391 84	9,591 84	2,200	8,491 07	10,691 07
San Bernardino	19,800	80,120 96	99,920 96	20,350	80,722 23	101,072 23
San Diego	19,800	97,844 80	117,644 80	22,000	109,801 97	131,801 97
San Francisco	13,200	185,788 64	198,988 64	14,850	215,641 47	230,491 47
San Joaquin	13,750	55,078 72	69,828 72	14,850	65,241 21	80,091 21
San Luis Obispo	12,650	17,395 68	30,045 68	12,650	18,778 53	31,428 53
San Mateo	8,800	25,987 52	34,787 52	11,000	33,947 11	44,947 11
Santa Barbara	11,000	31,735 52	42,735 52	11,000	35,862 95	46,862 95
Santa Clara	17,600	93,040 00	110,640 00	18,700	103,140 70	121,840 70
Santa Cruz	6,600	24,648 96	31,248 96	6,600	28,240 73	34,840 73
Shasta	6,600	8,557 44	15,157 44	6,600	9,943 13	16,543 13
Sierra	2,200	978 56	3,178 56	2,200	1,073 01	3,273 01
Siskiyou	15,400	11,261 76	26,661 76	15,400	11,564 44	26,964 44
Solano	13,200	22,500 64	35,700 64	13,200	21,221 15	34,421 15
Sonoma	15,400	48,537 44	63,937 44	15,950	52,545 66	68,495 66
Stanislaus	17,600	47,405 60	65,005 60	17,600	54,393 18	71,993 18
Sutter	4,400	4,581 44	8,981 44	5,500	6,392 40	11,892 40
Tehama	6,600	10,434 88	17,034 88	6,600	11,483 68	18,083 68
Trinity	2,200	978 56	3,178 56	2,200	1,141 50	3,341 50
Tulare	22,000	54,554 40	76,554 40	22,000	62,568 77	84,568 77
Tuolumne	4,400	5,159 68	9,559 68	4,400	5,342 22	9,742 22
Ventura	13,200	20,517 28	33,717 28	13,200	24,665 48	37,865 48
Yolo	6,600	10,741 92	17,341 92	6,600	12,328 20	18,928 20
Yuba	4,400	7,387 68	11,787 68	4,400	8,105 03	12,505 03
Totals	$681,450	$2,624,581 44	$3,306,031 44	$707,850	$3,057,364 24	$3,765,214 24

SECTION III. STATISTICS OF ELEMENTARY SCHOOLS.

TABLE No. 18-B.

Receipts by High School Districts in Each County From All Sources During the School Year Ending June 30, 1923.

Counties	Balance on hand at beginning of school year	Amount received from state apportionment	Amount received from county apportionment	Amount received from district taxes for maintenance	Amount received from district taxes for building	Amount received from sale of bonds	Amount received from miscellaneous sources	Total receipts
Alameda	$1,956,860 06	$346,095 74	$699,268 40	$1,293,427 87		$1,070,000 00	$133,360 51	$5,499,012 58
Alpine								
Amador	8,386 77	11,812 80	13,236 00	30,651 10		1,928 44	233 66	66,251 77
Butte	116,479 07	36,783 84	83,548 30	97,506 03	$70,060 82		2,468 13	406,846 19
Calaveras	9,845 10	7,113 28	16,412 36	11,527 27				44,928 01
Colusa	29,426 16	20,506 36	32,216 55	85,101 87			297 00	167,547 94
Contra Costa	255,614 33	52,676 96	88,380 93	341,121 54			16,450 29	754,244 05
Del Norte	25,749 90	3,623 36	17,570 44		29,413 09			76,386 79
El Dorado	732 19	6,163 04	45,896 17					52,791 40
Fresno	1,034,824 14	161,755 28	519,248 19	920,363 69		337,267 94	100,331 59	3,073,790 83
Glenn	85,227 00	16,016 16	30,283 69	80,926 42	3,095 01		887 48	216,435 76
Humboldt	43,730 90	35,020 80	70,041 60	184,333 34			11,250 85	344,377 49
Imperial	172,576 56	41,182 88	79,740 70	259,790 93		70,510 00	32,286 82	656,087 89
Inyo	46,058 53	14,026 56	14,715 38	46,612 07			1,664 46	124,577 00
Kern	420,183 25	58,061 28	118,390 00	417,066 01	507,471 70	380,000 00	48,248 75	1,949,420 99
Kings	38,640 68	22,986 08	49,293 40	151,322 17			1,162 50	263,314 83
Lake	3,930 18	15,801 88	27,412 00	32,692 96			25 00	79,952 02
Lassen	15,127 53	8,972 48	18,653 17	37,161 20	23,539 60		547 83	104,001 81
Los Angeles	4,072,137 24	952,078 82	2,103,257 15	6,532,583 57		7,145,000 00	774,969 01	21,580,005 79
Madera	14,507 09	16,380 96	32,136 50	109,185 16		30,000 00	3,843 73	206,054 04
Marin	1,497 00	27,113 28	82,417 94	86,471 86	21,840 18		3,014 58	222,354 84
Mariposa	1,029 35	2,822 72	10,108 40	2,115 18			14 25	16,089 90
Mendocino	67,947 16	35,652 16	74,479 60	69,227 43			1,073 82	248,380 17
Merced	53,931 90	31,653 92	60,847 50	196,608 72			53,239 90	393,341 94
Modoc	8,332 51	11,559 52	23,817 42	17,917 21			3,228 84	64,885 50
Mono								
Monterey	89,515 06	31,832 16	59,749 28	187,233 92	17	100,000 00	14,186 59	482,517 18
Napa	357,438 23	20,025 12	91,145 65	42,627 46	15,000 00		11,256 55	537,493 01
Nevada	—1,785 96	15,300 66	32,813 19	17,922 13		132,417 79	266 63	196,934 44
Orange	471,656 18	89,055 28	302,960 00	866,786 27		250,000 00	42,939 98	2,023,377 71
Placer	23,539 41	19,655 84	87,643 16	52,288 02			1,731 76	184,858 19
Plumas	1,207 41	3,623 36	38,437 92					43,268 69

Riverside	219,288 54	70,079 52	165,389 91	245,467 18	26,295 31	175,000 00	15,199 31	916,719 77
Sacramento	243,928 88	74,670 24	279,768 23	297,723 03		750,000 00	26,613 52	1,672,703 90
San Benito	86 98	9,591 84	46,992 72				355 37	57,026 91
San Bernardino	451,235 71	99,920 96	205,304 23	306,460 12		143,125 00	87,203 33	1,293,249 35
San Diego	707,326 02	117,644 80	262,141 04	725,197 71			10,389 91	1,822,699 48
San Francisco	641,816 58	198,988 64	1,116,575 99		519,721 11		9,562 54	2,486,664 86
San Joaquin	505,647 03	77,155 72	159,106 00	342,784 45		15,000 00	5,461 02	1,096,154 22
San Luis Obispo	102,525 70	30,045 68	60,619 76	186,121 28			2,159 02	381,471 44
San Mateo	627,842 34	34,787 52	67,238 60	247,007 24		180,000 00	1,655 14	1,158,530 84
Santa Barbara	815 527 78	42,735 52	88,110 00	294,915 00			18,657 73	1,259,946 03
Santa Clara	181,887 17	111,640 00	237,220 00	405,604 99		302,000 00	176,164 22	1,414,516 38
Santa Cruz	14,933 03	32,504 76	62,369 71	163,127 32			26,471 92	299,406 74
Shasta	33,461 86	15,157 44	32,067 00	57,374 96			3,850 57	141,911 83
Sierra	348 94	3,178 56	2,700 00	13,264 49				19,491 99
Siskiyou	58,150 16	26,661 76	30,309 65	61,521 06	45,685 75		779 84	223,108 22
Solano	80,431 65	35,700 64	73,330 33	111,006 98	29,704 25		25,209 97	355,383 82
Sonoma	297,530 69	63,937 44	168,390 00	264,764 6			23,215 53	817,838 33
Stanislaus	168,527 27	65,005 60	136,311 10	242,655 07	119,504 27		8,235 29	740,238 60
Sutter	13,765 38	8,981 44	30,501 00	42,778 16	43,887 58	250,000 00		389,913 56
Tehama	10,182 59	16,945 92	25,508 47	82,722 85			5,111 67	140,471 50
Trinity	2,595 07	3,178 56	10,380 03				56 10	16,209 76
Tulare	663,695 84	76,554 40	208,177 43	373,615 21		150,000 00	30,711 81	1,502,754,69
Tuolumne	20,428 45	9,559 68	14,800 71	23,071 35	10,077 89		1,922 25	79,860 33
Ventura	84,264 65	33,761 28	65,716 00	158,364 36		65,000 00	20,365 22	427,471 51
Yolo	3,637 53	17,341 92	52,737 55	50,759 84		95,000 00	6,059 39	225,527 23
Yuba	2,760 70	11,787 68	31,849 75	45,657 36			17,678 63	109,734 12
Totals	$15,377,072 07	$3,403,540 10	$8,548,686 20	$16,912,590 08	$1,465,326 73	$11,642 249 17	$1,779,069 81	$59,128,534 16

SECTION IV. STATISTICS OF SECONDARY SCHOOLS.

TABLE No. 18-C.

Receipts by High School Districts in Each County From All Sources During the School Year Ending June 30, 1924.

Counties	Balance on hand at beginning of school year	Amount received from state apportionment	Amount received from county apportionment	Amount received from district taxes for maintenance	Amount received from district taxes for building	Amount received from sale of bonds	Amount received from miscellaneous sources excluding transfers	Transfers from other districts in county	Transfers from other counties	Total receipts, including balance from previous school year
Alameda	$1,882,932 21	$396,279 24	$791,549 00	$1,403,149 91			$45,890 35	$283,875 00	$945 96	$4,804,621 67
Alpine										
Amador	5,711 80	12,079 58	13,837 60	29,769 71		82,021 74	410 20			63,830 63
Butte	82,187 78	40,113 36	85,218 00	72,034 38	$52,672 57	90,000 00	3,296 72			425,522 81
Calaveras	12,927 98	8,052 80	17,478 40	21,380 08			151 00			59,990 26
Colusa	11,046 93	19,641 63	32,264 76	80,577 33			3,191 56		12,550 10	159,272 31
Contra Costa	133,401 74	63,796 08	128,000 77	372,816 25			84,663 96			782,678 80
Del Norte	16,541 04	3,706 78	22,173 14		6,852 03		733 25			50,006 24
El Dorado	5,746 46	6,149 59	57,819 36				124 40			69,839 81
Fresno	639,896 09	190,690 58	466,342 58	943,274 29		75,000 00	36,509 48	7,130 97	34,900 32	2,303,744 31
Glenn	24,653 81	18,761 61	38,562 42	82,096 31			2,805 11		741 54	167,620 80
Humboldt	27,944 78	39,310 72	85,024 19	212,744 55			3,957 69			368,981 93
Imperial	172,286 61	41,185 84	80,724 90	247,209 56		30,000 00	41,782 52	15,000 00		628,189 43
Inyo	16,405 36	14,823 37	31,022 02	22,136 94						84,477 69
Kern	840,824 30	63,898 65	132,430 00	397,139 39	282,419 89		7,247 26	12,315 98	28 723 81	1,765,999 28
Kings	36,738 89	25,598 17	53,228 50	145,070 02		325,000 00	1,340 75	4,993 00	1,004 79	592,974 12
Lake	7,934 60	20,374 23	33,715 41	24,590 08		50,140 00	169 10			136,923 42
Lassen	21,638 44	9,696 56	18,704 00	45,451 84	22,979 97		513 80			118,984 61
Los Angeles	6,020,250 56	1,141,318 86	2,513,642 25	9,151,187 93		6,581,000 00	202,516 98	691 009 80	900 00	26,301,826 38
Madera	32,928 71	19,228 96	36,863 00	81,914 35			9,533 70		120 00	180,588 72
Marin	65,206 08	28,963 03	95,773 54	67,665 40	18,103 93	140,000 00	3,851 89		7,122 54	426,686 41
Mariposa	2,723 21	2,770 75	20,003 82				5 00			25,502 78
Mendocino	62,391 32	37,402 50	78,490 00	97,760 73		35,000 00	1,984 04			313,028 59
Merced	81,827 96	34,387 76	59,616 25	147,660 16		100,000 00	365 63		48,166 93	472,024 69
Modoc	6,315 62	11,508 45	23,317 94	22,659 02			1,919 38		2,557 53	68,277 94
Mono										
Monterey	36,433 60	34,560 96	66,096 88	201,199 64		52,205 35	8,968 82	2,015 00		401,480 25
Napa	168,460 56	23,793 23	40,887 84	51,701 51	51,485 00		1,761 09		1,219 79	339,309 02
Nevada	8,072 46	15,947 24	31,724 37	14,786 11			177 60		240 00	70,947 78
Orange	372,323 94	101,414 06	314,790 00	748,185 77			34,581 03			1,571,294 80
Placer	23,506 12	20,457 81	100,045 56	59,683 57			3,129 43			206,822 49
Plumas	2,705 65	4,163 38	5,280 00	33,231 19	10,474 44					55,854 66

Riverside	317,023 25	73,295 84	149,654 82	292,566 77		110,000 00	16,876 85	27,600 00	240 00	988,157 53
Sacramento	719,852 05	83,274 72	314,077 65	277,549 11		75,000 00	12,806 11	1,950 52	9,674 82	1,494,184 98
San Benito	11 17	10,691 07	48,915 22				9 615 49			69,232 95
San Bernardino	312,122 15	101,072 23	210,889 67	401 555 79		300,000 00	57,582 36	52,377 95	490 00	1,436,090 15
San Diego	140,264 49	131,891 97	310,788 90	682,239 75		850,000 00	29,779 86	102,397 31		2,247,272 28
San Francisco	530,732 89	230,491 47	1,202,667 19	117,476 25	83,296 86	393,179 76	4,579 22			2,562,423 64
San Joaquin	194,918 65	80,091 21	163,644 10	408,959 18			11,714 15			859,327 29
San Luis Obispo	91,551 04	31,428 53	64,478 00	201,778 58		200,000 00	5,051 78	40 00	567 52	594,895 45
San Mateo	557,218 04	44,947 11	97,865 85	270,422 60	82,412 24		85 106 56			1,137,972 40
Santa Barbara	474,918 55	46,862 95	96,075 00	349,983 11		150,000 00	6,975 52	13,340 00		1,138,155 13
Santa Clara	426,422 73	121,840 70	264,576 44	451,270 97		1,144,000 00	30,115 04	17,880 87	687 17	2,456,793 92
Santa Cruz	20,507 50	36,130 63	72,373 55	161,718 22			19,875 89		13,943 84	324,549 63
Shasta	42,805 64	16,543 13	33,634 08	45,720 00			25,104 84		3,946 67	167,754 36
Sierra	659 89	3,273 01	2,632 69	12,623 49						19,189 08
Siskiyou	59,618 22	26,964 44	55,355 00	42,503 79	36,966 00		2,534 84	3,161 00		218,103 29
Solano	75,503 14	34,421 15	70,722 01	116,688 22	17,600 05		2,639 04	17,000 00	14,174 74	346,748 35
Sonoma	92,966 33	68,495 66	170,850 00	248,340 87		375,000 00	12,877 38	8,000 00		976,530 24
Stanislaus	135,603 37	71,993 18	143,593 16	233,051 34	51,839 63		3,759 10	1,770 43	2,340 00	643,950 21
Sutter	211,090 38	11,892 40	37,063 60	74,326 95	35,135 27		5,505 87			375,014 47
Tehama	16,992 54	18,083 68	37,590 87	76,559 94			12,102 79			161,329 82
Trinity	942 33	3,341 50	14,515 15				170 77			18,969 75
Tulare	214,021 03	84,568 77	221,695 00	391,690 88			7,678 02			919,653 70
Tuolumne	13,482 53	9,742 22	19,028 18	20,303 31	11,873 08					74,429 32
Ventura	74,014 23	37,865 48	74,387 80	191,110 58	35,752 76	220,000 00	2,571 94	11,472 12		647,174 91
Yolo	75,207 11	18,928 20	56,169 39	75,674 84	16,919 92	124,000 00	24,791 48		4,139 35	395,830 29
Yuba	2,157 21	12,505 03	49,200 64	29,440 17	14,309 10		4,803 41	40 68	5,663 40	118,119 64
Totals	$15,612,561 07	$3,860,622 06	$9,457,070 46	$19,950,630 73	$831,092 74	$11,421,546 85	$896,200 05	$1,273,370 63	$196,060 82	$63,499,155 41

SECTION IV. STATISTICS OF SECONDARY SCHOOLS.

TABLE No. 18-D.

Expenditures of High Schools in Each County for All Purposes for the School Year Ending June 30, 1923.

Counties	General control	Teachers' salaries	Other exercises of instruction	Library	Operation of school plant	Maintenance of school plant	Fixed charges	Capital outlays	Auxiliary agencies and sundry activities	Laboratory supplies	Total	Balance on hand
Alameda	$64,706 43	$1,820,751 08	$118,652 78	$27,512 81	$160,417 29	$59,384 83	$16,282 41	$1,293,022 08	$47,004 21	$8,346 45	$3,616,080 37	$1,882,932 21
Alpine												
Amador	239 67	38,918 50	2,428 48	677 76	6,056 00	3,398 52	327 49	7,821 96	457 08	214 21	60,539 97	5,711 80
Butte	7,007 77	153,609 24	15,218 37	6,361 23	21,411 81	3,658 74	2,839 46	101,767 92	8,557 06	4,226 81	324,658 41	82,187 78
Calaveras	102 67	19,671 00	1,051 82	982 51	1,698 06	590 90	798 74	1,217 78	5,886 55		32,000 03	12,927 98
Colusa	578 72	68,137 59	6,539 89	3,080 65	10,285 17	5,227 49	1,351 58	53,535 02	6,768 87	993 06	156,500 95	11,046 99
Contra Costa	5,913 82	261,320 02	14,456 42	8,127 50	41,080 36	21,620 17	3,415 35	230,002 29	29,595 40	5,310 98	620,842 31	133,401 74
Del Norte	11 78	11,625 00	1,044 09	373 49	2,486 40	334 89	270 90	36,786 32	6,347 92	508 83	59,789 62	16,597 17
El Dorado	777 25	23,730 00	940 67	1,008 71	2,275 74	3,087 46	375 75	9,853 30	3,777 61	1,218 45	47,044 94	5,746 46
Fresno	15,525 21	1,061,778 66	81,401 04	34,301 96	100,373 17	24,598 72	22,298 25	1,023,811 75	63,024 55	6,781 43	2,433,894 74	639,896 09
Glenn	1,126 19	71,043 95	8,366 82	1,712 74	8,750 28	8,968 41	1,044 54	82,203 17	7,393 10	1,232 75	191,781 95	24,653 81
Humboldt	2,376 04	157,410 76	7,580 43	4,435 93	19,695 63	4,788 59	1,133 69	87,730 58	30,436 78	844 28	316,432 71	27,944 78
Imperial	27,607 12	180,610 63	12,300 80	384 92	27,698 37	11,762 85	6,726 52	162,032 85	51,842 43	2,718 04	483,714 53	172,373 36
Inyo	608 07	43,055 00	3,254 75	1,820 00	8,271 85	1,805 00	1,462 00	44,477 22	2,570 00	756 75	108,080 64	16,496 36
Kern	6,543 43	328,113 37	48,888 51	14,245 42	59,835 00	22,867 13	9,403 66	477,433 09	135,373 01	5,894 07	1,108,596 69	840,824 30
Kings	278 06	107,157 85	2,237 26	3,669 71	39,295 21	2,173 88	942 45	66,356 04	3,462 48	1,002 62	226,575 56	36,739 27
Lake	486 13	51,172 59	2,800 17	1,594 64	3,536 64	333 26	756 57	6,624 77	4,264 04	448 61	72,017 42	7,934 60
Lassen	145 82	46,246 25	5,171 00	1,829 61	5,614 01	7,043 54	1,345 91	12,682 18	1,610 17	507 58	82,196 07	21,805 74
Los Angeles	435,286 51	6,518,673 86	702,630 12	202,349 93	671,525 84	460,011 66	427,598 17	5,968,711 09	148,776 06	24,191 99	15,559,755 23	6,020,250 56
Madera	317 90	75,254 19	7,482 72	2,711 72	11,877 54	5,512 44	2,918 26	43,379 16	22,784 21	887 19	173,125 33	32,928 71
Marin	2,344 68	102,896 80	8,098 20	3,708 14	15,795 79	1,777 90	1,864 11	11,268 15	8,346 80	1,048 10	157,148 76	65,206 08
Mariposa	104 55	7,200 00	173 34	123 38	571 65	1,217 65	272 60	45 36	3,805 00	3 05	13,516 58	2,573 32
Mendocino	1,466 85	108,046 72	5,066 88	2,875 39	12,223 73	6,221 00	1,556 97	29,627 20	17,803 82	1,100 29	185,988 85	62,391 32
Merced	1,440 09	124,432 35	6,431 87	4,001 66	15,764 86	13,486 86	2,698 30	110,258 34	32,615 78	383 87	311,513 98	81,827 96
Modoc	433 92	42,117 44	2,016 53	983 89	5,655 52	701 08	131 71	3,757 25	2,743 83	28 71	58,569 88	6,315 62
Mono												
Monterey	4,053 65	146,073 62	16,264 96	5,564 08	17,983 67	2,332 04	5,296 52	216,032 80	31,184 73	1,297 51	446,083 58	36,433 60
Napa	1,105 73	72,900 78	4,073 26	2,328 08	12,814 72	4,940 01	1,625 76	266,629 24	2,487 46	127 41	369,032 45	168,460 56
Nevada	1,831 01	43,782 00	1,817 97	898 97	4,262 51	727 25	830 34	132,498 51	1,988 64	224 78	188,861 98	8,072 46
Orange	19,427 87	481,638 88	52,481 50	29,145 87	76,475 10	38,231 79	9,069 97	848,315 89	88,000 98	8,165 29	1,650,953 14	372,424 57
Placer	813 56	99,149 30	6,882 80	3,184 05	18,008 76	2,949 63	1,232 96	19,372 33	8,633 29	1,125 39	161,352 07	23,506 12
Plumas	69 05	20,361 67	3,710 67	801 44	3,775 57	1,870 52	1,063 55	6,845 78	1,603 21	376 21	40,567 67	2,701 02

Riverside	9,600 13	364,904 70	4,998 77	9,256 06	37,264 25	26,587 87	5,689 55	100,585 48	37,437 68	2,472 04	598,796 53	317,923 24
Sacramento	10,433 94	455,241 71	36,363 32	15,531 37	32,989 48	13,378 09	3,286 82	351,198 48	33,428 76	999 88	952,851 85	719,852 05
San Benito	53 00	43,062 75	4,485 73	----------	3,586 30	1,628 96	296 62	254 15	3,291 83	356 40	57,015 74	11 17
San Bernardino	22,362 35	466,167 61	18,371 26	12,397 94	80,629 28	10,732 34	8,483 87	322,216 73	27,042 70	12,723 12	981,127 20	312,122 15
San Diego	20,291 05	683,259 54	64,362 98	32,009 59	82,571 38	12,624 99	10,998 94	748,497 86	35,863 97	1,954 69	1,692,434 99	130,264 49
San Francisco	27,912 94	1,048,746 64	15 00	9,026 30	78,390 17	1,848 98	111,289 50	674,114 83	262 05	4,304 75	1,955,911 16	530,753 70
San Joaquin	11,560 11	350,588 26	29,937 32	13,113 45	42,087 60	9,133 34	6,742 10	428,371 78	8,509 31	1,192 30	901,235 57	194,918 65
San Luis Obispo	2,350 31	130,798 36	7,060 50	3,284 37	12,107 07	4,610 07	1,792 14	92,569 18	33,662 47	1,685 93	289,920 40	91,551 04
San Mateo	3,645 13	200,024 92	10,264 75	9,611 86	23,763 37	10,626 63	8,684 60	320,858 60	13,832 94	----------	601,312 80	557,218 04
Santa Barbara	10,559 12	243,844 80	10,195 64	5,757 13	27,562 17	14,395 59	10,373 34	432,477 59	20,441 81	9,420 29	785,027 48	474,918 55
Santa Clara	15,531 82	468,136 31	24 273 19	18,022 62	69,651 84	19,271 21	8,380 29	331,543 55	23,727 93	9,554 89	988,093 65	426,422 73
Santa Cruz	6,942 20	150,402 22	7,318 55	8,949 55	18,906 31	13,399 25	988 30	43,513 64	26,763 07	1,716 15	278,809 24	20,507 50
Shasta	1,341 55	60,506 54	2,587 79	1,620 42	6,102 07	4,382 31	794 83	3,422 12	18,078 47	270 09	99,106 19	42,805 64
Sierra	109 38	15,333 30	379 02	496 75	700 45	580 54	----------	29 00	761 25	474 59	18,864 28	627 71
Siskiyou	2,026 01	83,999 32	2,994 78	2,057 45	9,346 33	5,580 30	1,596 16	59,271 46	4,481 38	1,146 28	172,499 47	50,608 75
Solano	2,880 71	167,022 71	7,330 79	4,186 76	24,607 04	9,761 35	2,423 60	54,167 08	8,518 64	982 00	281,880 68	73,503 14
Sonoma	7,042 92	303,195 20	31,457 18	8,667 03	36,041 89	18,316 60	31,522 46	253,752 85	34,905 77	----------	724,902 00	92,936 33
Stanislaus	9,556 31	294,741 15	3,942 19	11,156 28	34,128 69	10,776 03	2,249 99	194,478 59	31,297 39	12,308 61	604,635 23	135,603 37
Sutter	196 63	54,097 80	1,284 11	2,275 64	8,130 13	7,772 65	3,320 26	82,143 92	18,857 56	744 50	178,823 20	211,090 36
Tehama	1,724 86	76,233 01	2,742 73	2,652 72	10,684 30	5,492 38	2,231 17	4,067 64	17,033 02	617 13	123,478 96	16,992 54
Trinity	101 01	13,320 00	675 09	----------	924 70	32 25	156 40	20 50	25 00	12 48	15,267 43	942 33
Tulare	12,392 05	325,722 64	89,413 56	12,619 59	47,647 13	17,473 99	12,133 72	714,583 38	51,094 46	5,642 54	1,288,723 06	214,031 63
Tuolumne	----------	28,090 00	1,488 00	751 63	7,764 32	3,937 99	1,446 87	20,837 16	1,373 26	642 77	66,332 00	13,528 33
Ventura	14,014 46	131,374 50	13,880 64	4,401 60	21,668 48	11,037 42	2,009 10	133,066 27	20,801 32	1,203 49	353,457 28	74,014 23
Yolo	55 82	77,227 41	6,336 66	2,451 71	8,299 63	3,532 24	1,296 48	41,733 71	9,281 80	104 66	150,320 12	75,207 11
Yuba	1,149 28	53,045 36	1,715 25	1,477 17	5,142 27	1,713 09	1,241 27	39,056 71	3,011 24	25 27	107,576 91	2,157 21
Totals	$796,562 94	$18,575,965 96	$1,533,338 92	$562,661 18	$2,116,212 90	$960,220 67	$766,365 87	$16,800,931 68	$1,262,930 15	$150,519 56	$43,525,709 83	$15,602,824 33

TABLE No. 18-E.

Expenditures of High Schools in Each County for All Purposes for the School Year Ending June 30, 1924.

Counties	General control	Teachers' salaries	Other exercises of instruction	Library	Operation of school plant	Maintenance of school plant	Fixed charges	Capital outlays	Auxiliary agencies and sundry activities	Laboratory supplies	Total expenditures except transfers	Payments and transfers to other districts within this county	Payments and transfers to other counties	Total expenditures including transfers	Balance on hand
Alameda	$60,396 40	$2,155,666 96	$111,412 08	$25,436 09	$194,929 98	$59,299 97	$33,649 75	$1,258,644 73	$44,317 25	$11,237 56	$3,954,990 77	.....	.....	$3,954,990 77	$849,630 90
Alpine	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Amador	243 32	40,815 53	1,594 51	955 75	7,806 35	2,186 60	329 28	3,556 10	536 55	175 31	58,159 30	.....	.....	58,199 30	5,631 33
Butte	4,007 16	171,624 23	8,203 04	6,963 32	18,217 87	4,079 33	3,490 14	100,763 09	23,284 54	907 70	340,940 42	83,965 62	.....	344,906 04	80,015 77
Calaveras	151 36	24,283 00	1,830 56	1,597 41	1,900 51	305 78	695 09	6,704 05	8,390 65	.....	45,768 41	.....	.....	45,768 41	14,221 85
Colusa	1,426 27	83,150 00	9,880 95	4,752 89	10,479 04	6,961 74	1,249 19	6,809 39	5,707 87	1,643 50	132,060 84	.....	.....	132,060 84	27,211 47
Contra Costa	6,966 85	358,111 49	17,760 58	11,245 96	53,749 51	36,796 22	48,034 46	119,981 37	32,616 55	9,250 54	694,513 44	.....	$527 60	695,041 04	87,637 76
Del Norte	87 02	14,517 59	1,785 64	696 32	1,864 06	3,020 16	242 85	19,755 59	4,349 72	.....	46,348 86	.....	.....	46,348 86	3,657 38
El Dorado	944 46	27,611 67	873 38	1,831 86	2,662 94	3,218 07	742 38	18,885 97	4,032 08	1,613 53	62,416 34	.....	.....	62,416 34	7,423 47
Fresno	22,829 00	989,527 95	79,447 96	33,052 68	123,858 08	37,235 16	19,159 69	754,544 62	74,186 82	7,310 82	2,141,152 78	1,373 98	31,201 03	2,173,727 79	220,016 52
Glenn	1,277 15	80,084 21	6,181 14	2,387 39	9,716 12	7,304 87	2,596 81	5,341 93	7,004 35	1,270 00	124,663 97	.....	12,550 10	137,214 07	30,406 73
Humboldt	6,188 31	168,005 26	11,278 16	6,544 80	19,561 95	6,604 48	2,073 92	65,761 92	27,476 05	636 41	314,131 26	.....	.....	314,131 26	54,850 67
Imperial	9,766 17	205,976 57	11,436 48	7,762 61	44,014 85	12,490 60	6,743 26	217,453 36	35,805 69	123 81	551,573 40	.....	.....	551,573 40	76,616 03
Inyo	701 50	43,269 21	3,061 70	1,964 92	6,185 35	1,384 81	485 06	6,054 46	1,266 32	382 54	64,756 37	.....	.....	64,756 37	19,721 32
Kern	13,713 62	358,805 12	58,742 72	16,194 18	64,971 01	18,559 70	8,388 91	607,858 71	90,456 65	9,234 24	1,248,924 53	12,315 08	.....	1,260,640 51	505,358 77
Kings	951 55	115,903 93	5,768 86	4,378 98	26,927 09	1,927 67	1,893 41	103,976 00	7,436 45	1,000 38	270,164 32	.....	9,887 30	280,051 62	312,922 50
Lake	504 45	53,942 27	2,416 49	1,603 52	4,340 39	2,405 29	595 52	13,738 99	3,615 64	1,119 83	84,372 30	.....	.....	84,372 30	52,551 12
Lassen	266 32	49,217 75	3,906 83	1,982 70	7,835 73	1,555 40	6 90	36,675 53	3,417 50	1,426 23	106,190 09	.....	.....	106,190 09	12,793 02
Los Angeles	522,209 66	7,785,508 19	741,256 88	257,435 18	850,359 24	545,756 95	66,542 72	8,902,273 85	209 381 82	22,680 25	19,903,404 74	490,630 45	.....	20,394,035 19	5,907,791 19
Madera	4,379 40	71,896 70	5,189 73	1,982 89	11,395 29	5,858 59	1,603 04	18,514 94	15,889 20	878 93	137,588 71	.....	.....	137,588 71	43,000 01
Marin	3,274 73	141,331 03	13,715 36	5,288 83	21,599 21	2,125 26	3,688 80	145,671 60	11,825 93	1,536 08	350,456 83	.....	.....	350,456 83	76,229 58
Mariposa	86 80	7,157 26	610 98	105 73	598 55	300 77	49 55	701 13	9,421 68	17 63	19,050 08	.....	560 26	19,610 34	5,892 44
Mendocino	1,366 85	127,148 79	7,156 71	3,017 16	14,592 02	6,992 03	590 61	43,525 01	22,502 51	984 91	227,876 60	750 00	.....	228,626 60	81,401 99
Merced	1,418 28	149,267 05	4,488 48	6,121 30	18,638 26	8,717 45	3,309 38	209,259 09	28,638 53	1,116 69	430,974 51	.....	.....	430,974 51	41,050 18
Modoc	328 83	45,832 01	2,513 92	1,346 40	4,886 26	2,539 69	672 71	1,932 65	2,817 74	86 77	62,956 98	.....	.....	62,956 98	5,320 96
Mono	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Monterey	2,829 42	163,758 30	7,809 02	5,076 25	20,370 12	2,907 80	12,238 92	110,123 26	22,288 44	1,465 73	348,867 26	2,015 00	7,910 26	358,792 52	42,687 73
Napa	2,232 60	81,026 37	6,001 38	2,555 10	15,075 25	6,564 76	3,016 76	180,385 23	3,911 85	.....	300,768 79	.....	.....	300,768 79	38,540 23
Nevada	2,070 77	44,624 00	2,663 87	1,432 18	4,787 01	1,185 69	453 23	7,143 08	4,461 78	777 95	69,599 56	.....	.....	69,599 56	1,348 22
Orange	18,032 30	529,597 47	21,805 50	38,855 44	114,479 64	37,112 74	13,796 57	630,491 59	65,125 78	14,391 05	1,483,598 08	.....	.....	1,483,598 08	87,606 72
Placer	133 85	112,323 88	8,411 37	3,454 63	18,385 10	2,239 59	2,172 32	37,309 82	7,147 40	157 09	191,735 05	.....	.....	191,735 05	15,087 44
Plumas	165 10	28,076 50	3,731 12	1,570 17	4,020 42	1,600 87	1,144 68	8,717 87	1,066 42	.....	50,813 15	.....	.....	50,813 15	5,041 51
Riverside	11,151 10	359,806 63	5,597 39	8,319 43	39,463 35	37,533 39	18,469 94	261,190 14	46,818 36	3,006 33	791,659 34	.....	.....	791,659 34	196,498 19
Sacramento	13,044 17	484,313 23	17,099 49	18,336 19	35,511 06	17,446 00	4,491 66	492,870 61	29,840 57	761 64	1,113,714 62	4,350 52	14,054 74	1,132,119 88	362,065 40
San Benito	.....	49,964 00	3,740 01	336 71	2,874 92	1,831 60	1,062 26	.....	1,810 18	216 79	61,833 47	.....	.....	61,833 47	7,399 48
San Bernardino	25,512 32	543,933 51	33,501 46	13,492 92	83,897 20	12,470 84	11,945 56	281,214 66	38,393 16	5 323 90	1,049,685 56	.....	.....	1,049,685 56	386,404 59
San Diego	21,170 62	760,428 45	50,712 97	32,939 87	97,608 97	24,389 25	8,095 58	284,406 39	46,775 55	1,640 75	1,331,168 40	.....	.....	1,331,168 40	916,103 88
San Francisco	31,304 72	1,105,479 26	13,027 86	19,666 27	85,455 57	5,963 87	129,778 75	935,903 19	750 00	6,607 43	2,327,276 95	.....	.....	2,327,276 95	235,146 69
San Joaquin	11,934 48	380,928 83	20,892 02	12,318 12	18,708 57	8,306 21	7,389 60	291,223 64	18,239 94	2,145 55	802,077 96	.....	8,534 82	810,612 78	48,714 51
San Luis Obispo	3,649 43	142,250 34	6,989 30	4,091 21	12,041 87	5,107 12	4,639 45	120,761 70	29,803 12	1,490 13	330,823 67	40 00	.....	330,863 67	264,031 78
San Mateo	5,920 60	213,614 81	10,395 21	8,781 83	34,032 35	25,655 54	8,728 79	544,453 69	24,341 58	.....	905,938 43	.....	.....	905,938 43	232,033 97
Santa Barbara	20,139 37	258,038 99	14,069 43	7,397 09	30,920 11	5,541 09	7,122 80	507,325 89	29,259 32	11,997 23	891,811 32	.....	.....	891,811 32	246,343 81
Santa Clara	17,512 26	530,005 35	20,682 49	16,883 38	57,470 21	23,735 77	10,233 50	668,077 89	51,985 25	9,016 29	1,405,602 39	17,880 87	.....	1,423,483 26	1,033,310 66
Santa Cruz	7,311 47	170,791 99	8,468 02	11,645 28	20,009 01	22,619 72	3,945 66	19,937 10	30,672 33	1,081 00	296,481 58	.....	.....	296,481 58	28,068 05
Shasta	1,535 52	67,749 99	2,624 44	2,028 79	5,829 98	5,839 09	1,658 5	6,203 65	22,051 86	400 23	115,922 09	.....	.....	115,922 09	51,832 27
Sierra	144 69	16,500 00	604 70	250 76	789 35	350 63	7 54	500 00	24 00	.....	19,171 67	.....	.....	19,171 67	17 41
Siskiyou	2,481 82	101,977 50	7,508 77	2,250 80	11,572 03	2,885 07	2,941 10	48,598 90	9,735 79	2 90	189,954 68	.....	.....	189,954 68	28,148 61
Solano	4,781 38	173,489 45	8,233 51	4,716 58	26,320 27	11,371 68	4,066 66	61,476 42	10,896 10	1,369 29	306,731 34	.....	4,139 35	310,870 69	35,877 66
Sonoma	7,885 81	324,442 71	31,699 19	11,000 03	36,673 19	15,211 80	6,358 94	205,436 80	45,659 22	.....	684,367 69	.....	.....	684,367 69	292,162 55
Stanislaus	18,880 31	310,924 52	3,023 23	11,400 50	34,627 83	24,983 01	5,979 58	119,335 96	30,200 41	12,664 48	572,819 83	.....	.....	572,819 83	71,130 38
Sutter	1,259 88	70,087 21	1,432 02	2,129 78	7,019 23	547 09	3,339 60	247,016 02	8,783 45	1,339 02	344,054 30	.....	.....	344,054 30	30,960 17
Tehama	2,441 10	77,730 34	3,419 03	2,806 33	9,830 79	4,170 70	605 71	5,138 58	23,615 19	264 19	130,021 96	.....	.....	130,021 96	31,307 86
Trinity	53 50	13,523 00	260 19	.....	832 57	281 97	261 33	1,355 52	50 00	.....	16,618 08	.....	.....	16,618 08	2,351 67
Tulare	12,258 94	330,147 86	21,865 51	13,212 60	47,508 06	14,877 36	10,745 91	308,796 40	56,738 83	4,108 01	820,259 48	1,500 00	56,010 80	877,770 28	41,883 42
Tuolumne	263 73	33,605 00	1,117 21	1,112 56	7,750 82	4,968 17	723 61	10,406 66	4,265 21	450 00	64,662 97	.....	.....	64,662 97	9,766 35
Ventura	4,411 56	164,942 38	13,098 35	6,424 29	24,350 30	12,189 89	3,319 76	213,943 25	27,826 28	1,858 99	472,345 05	4,429 12	.....	476,774 17	170,409 74
Yolo	113 16	90,282 87	7,744 64	3,015 71	8,602 73	3,131 12	2,252 31	121,169 64	8,284 73	826 90	245,423 81	.....	.....	245,423 81	159,406 48
Yuba	2,302 62	55,333 71	1,734 57	1,853 51	5,837 54	3,348 47	1,275 02	21,099 11	4,338 11	545 63	97,668 29	1,815 65	.....	99,483 94	18,635 70
Totals	$919,605 25	$21,033,289 07	$1,465,496 38	$673,713 49	$2,474,645 06	$1,124,315 39	$494,195 16	$19,420,401 84	$1,387,449 80	$158,242 13	$49,206,353 57	$541,067 19	$145,376 26	$49,892,797 02	$13,608,358 39

SECTION IV. STATISTICS OF SECONDARY SCHOOLS.

TABLE No. 18-F.

Valuation of Property, Outstanding Bonded Debt, and Books in High School Libraries as of June 30,1923.

Counties	Lots and school houses	Laboratories, furniture, apparatus and equipment	Library books	Total	Total outstanding bonded debt	Number of volumes in high school library
Alameda	$3,604 045	$522,017	$127,287	$4,253,349	$4,625,000	125,192
Alpine	.....	.....	.....	.....	.....	.....
Amador	86,000	29,170	4,250	119,420	16,000	2,374
Butte	868,705	76,050	21,908	966,754	541,000	20,887
Calaveras	8,700	6,100	3,250	18,050	.....	4,687
Colusa	192,873	32,591	7,380	232,763	116,500	10,769
Contra Costa	980,528	151,005	37,945	1,172,478	391,500	23,065
Del Norte	80,000	18,900	3,400	102,300	.....	2,200
El Dorado	40,000	14,300	5,300	59,600	.....	2,901
Fresno	4,201,721	661,361	86,053	4,949,135	2,960,000	86,172
Glenn	325,300	45,800	5,300	376,400	154,000	4,264
Humboldt	489,500	89,700	16,200	585,400	181,000	19,538
Imperial	989,000	143,762	16,550	1,149,312	657,500	6,009
Inyo	355,800	33,925	5,890	395,615	334,450	8,865
Kern	1,253,000	359,150	24,745	1,636,855	685,000	9,918
Kings	541,325	69,535	17,350	628,210	385,000	6,635
Lake	89,000	26,483	7,869	123,352	53,500	6,221
Lassen	125,000	28,400	4,400	157,800	75,000	2,859
Los Angeles	17,430,007	3,100,021	752,702	21,282,730	18,294,750	823,926
Madera	271,800	51,150	4,505	327,455	170,000	1,964
Marin	309,100	107,090	6,550	413,740	69,000	7,005
Mariposa	19,500	3,320	2,000	24,820	8,400	1,120
Mendocino	146,800	36,090	14,969	197,859	58,000	16,507
Merced	568,659	71,860	21,404	661,914	260,375	15,322
Modoc	112,500	16,175	6,540	135,215	.....	5,692
Mono	.....	.....	.....	.....	.....	.....
Monterey	726,900	86,480	19,475	832,855	485,000	17,084
Napa	548,000	31,100	9,959	589,059	391,500	12,262
Nevada	189,590	16,325	6,117	202,942	146,000	6,531
Orange	3,201,921	442,570	80,675	3,725,166	1,355,500	62,867
Placer	196,000	40,100	13,250	249,350	47,000	11,300
Plumas	52,500	10,900	3,000	66,400	.....	3,650
Riverside	789,400	137,535	28,998	946,933	566,500	18,036
Sacramento	1,575,110	176,771	20,175	1,772,056	1,932,000	15,397
San Benito	80,000	10,900	6 200	97,100	.....	4,518
San Bernardino	2,070,485	248,235	39,000	2,357,750	1,326,125	37,162
San Diego	2,213,820	311,884	90,881	2,616,585	1,398,600	21,553
San Francisco	3,339,742	253,910	105,245	3,699,897	2,227,550	6,916
San Joaquin	1,708,604	148,755	27,059	1,884,419	1,059,000	11,280
San Luis Obispo	430,050	82,675	16,976	529,701	269,000	13,302
San Mateo	1,119,290	85,982	23,972	1,229,244	982,000	21,211
Santa Barbara	845,590	106,750	26,159	978,400	863,800	13,912
Santa Clara	1,634,944	248,835	66,953	1,950,732	1,162,000	42,382
Santa Cruz	596,000	66,700	27,669	690,369	217,000	7,384
Shasta	120,500	24,350	8,159	153,009	34,000	3,323
Sierra	.....	2,150	945	3,095	.....	945
Siskiyou	349,000	23,125	9,763	381,888	72,000	14,233
Solano	587,800	66 301	17,131	671,232	408,000	9,240
Sonoma	628,000	129,125	31,885	789,010	602,000	11,598
Stanislaus	1,024,715	173,373	40,370	1,238,458	669,600	37,685
Sutter	430,718	34,915	5,229	470,862	330,000	3,105
Tehama	241,000	33,750	7,600	282,350	104,000	2,603
Trinity	10,000	400	850	11,250	.....	800
Tulare	1,772,330	300,142	34,961	2,107,433	1,596,250	44,306
Tuolumne	117,500	16,505	5,530	139,535	.....	4,285
Ventura	733,820	83,325	13,250	830,395	519,000	14,513
Yolo	286,700	23,100	5,300	315,100	197,000	6,150
Yuba	159,000	15,425	5,200	170,625	23,000	4,650
Totals	$60,813,793	$9,135,328	$2,005,627	$71,954,748	$48 920,400	1,698,305

SECTION IV. STATISTICS OF SECONDARY SCHOOLS.

TABLE NO. 18-G.

Valuation of Property, Outstanding Bonded Debt, and Books in High School Libraries as of June 30, 1924.

Counties	Lots and school houses	Laboratories, furniture, apparatus and equipment	Library books	Total	Total outstanding bonded debt	Number of volumes in high school library
Alameda	$4,759,438	$531,549	$148,637	$5,439,624	$4,496,000	125,628
Alpine						
Amador	86,000	31,630	5,200	122,830	15,000	2,640
Butte	866,695	83,054	22,980	972,729	590,750	25,052
Calaveras	8,700	11,653	3,800	24,153		5,356
Colusa	231,873	35,830	4,852	272,555	100,000	5,826
Contra Costa	990,737	181,738	48,474	1,220,949	386,000	35,784
Del Norte	64,000	17,600	2,003	83,603		1,170
El Dorado	52,000	15,900	8,916	76,816		2,208
Fresno	3,890,069	655,272	90,723	4,636,064	2,972,000	106 137
Glenn	325,300	45,800	6,100	377,200	149,000	3,780
Humboldt	546,000	100,700	17,500	664,200	174,000	12,584
Imperial	1,040,250	162,100	8,050	1,210,400	673,500	6,410
Inyo	356,590	37,193	6,865	400,648	332,100	6,396
Kern	1,746,175	422,964	27,355	2,196,494	685,000	25,732
Kings	557,500	72,250	16,985	646,735	396,800	9,941
Lake	92,575	38,912	9,178	140,665	101,500	9,913
Lassen	156,200	15,000	8,000	179,200	75,000	8,175
Los Angeles	25,651,278	3,799,059	1,020,168	30,470,505	24,252,000	1,089,835
Madera	295,250	51,755	7,300	354,305	165,000	7,422
Marin	367,600	119,280	5,230	492,110	182,000	6,045
Mariposa	20,000	3,550	1,900	25,450	7,800	1,200
Mendocino	182,300	41,840	15,422	239,562	53,750	17,778
Merced	625,650	73,825	23,286	722,761	349,520	23,919
Modoc	109,500	17,850	7,035	134,385		5,477
Mono						
Monterey	889,900	93,260	20,740	1,003,900	472,000	18,672
Napa	650,500	31,225	9,460	691,185	382,000	6,991
Nevada	177,000	16,640	6,292	199,932	155,000	7,179
Orange	3,683,350	475,650	85,565	4,244,565	1,327,750	75,328
Placer	229,000	40,300	14,300	283,600	44,000	12,503
Plumas	88,500	27,500	2,800	118,800		3,500
Riverside	970,500	161,300	29,550	1,161,350	667,753	21,622
Sacramento	1,998,400	204,951	68,935	2,272,286	1,974,000	57,041
San Benito	80,000	10,900	6,200	97,100		4,824
San Bernardino	2,428,485	286,120	71,670	2,786,275	1,573,800	70,781
San Diego	2,488,870	401,819	98,377	2,989,066	2,218,900	26,014
San Francisco	4 109,830	368,838	59,846	4,538,514	2,437,900	109,242
San Joaquin	1,979,450	241,709	34,015	2,255,174	1,018 000	43,206
San Luis Obispo	627,900	108,435	19,105	755,440	460,000	5,812
San Mateo	1,463,460	101,502	29,402	1,594,364	926,000	24,828
Santa Barbara	1,384,786	153,051	26,136	1,563,973	977,000	34,429
Santa Clara	2,290,310	239,068	45,161	2,574,539	2,260,500	33,610
Santa Cruz	540,000	88,400	33,234	661,634	204,000	28,534
Shasta	155,500	31,960	8,304	195,764	32,000	9,160
Sierra		1,650	800	2,450		1,325
Siskiyou	398,600	30,500	9,963	439,063	35,000	3,928
Solano	635,800	67,254	19,160	722,214	394,000	13,818
Sonoma	1,231,750	140,925	35,812	1,408,487	1,115,000	13,754
Stanislaus	1,081,500	197,290	51,726	1,330,516	644,400	40,697
Sutter	466,124	45,824	6,160	518,108	307,500	5,875
Tehama	241,000	33,750	7,600	282,350	104,000	5,282
Trinity	10,000	400	850	11,250		600
Tulare	2,076,309	325,683	39,072	2,441,064	1,480,000	46,325
Tuolumne	117,300	18,260	3,550	139,110	9,000	7,637
Ventura	969,322	111,396	15,451	1,096,169	686,000	17,786
Yolo	243,200	38,800	2,300	284,300	314,000	2,900
Yuba	150,000	13,700	4,950	168,650	21,000	7,380
Totals	$76,878,326	$10,674,364	$2,382,445	$89,935,135	$58,397,223	2,304,991

SECTION IV. STATISTICS OF SECONDARY SCHOOLS.

TABLE NO. 19.

Rate of County High School Tax, and Average Cost per Pupil Exclusive of Capi.al Outlays, for the School Years Ending June 30, 1923, and June 30, 1924.

Counties	Rate of tax for high schools		Average cost per pupil, in average daily attendance (exclusive of capital outlays)	
	1922-1923	1923-1924	1922-1923	1923-1924
Alameda	.248	.26	$186 24	$186 03
Alpine	.....	.....	.....	.....
Amador	.23	.21	233 27	254 15
Butte	.24	.24	197 92	271 58
Calaveras	.23	.24	192 39	228 45
Colusa	.15	.15	285 22	322 73
Contra Costa	.115	.16	219 74	286 53
Del Norte	.19	.28	360 67	369 35
El Dorado	.09	.11	214 98	275 51
Fresno	.33	.28	241 32	237 56
Glenn	.15	.18	235 16	273 59
Humboldt	.205	.185	193 16	195 26
Imperial	.20	.20	307 00	468 37
Inyo	.14	.27	261 94	241 57
Kern	.08	.089	300 84	286 30
Kings	.21	.22	217 39	213 06
Lake	.44	.51	248 64	255 91
Lassen	.16	.16	280 29	303 56
Los Angeles	.159	.149	229 67	228 56
Madera	.18	.18	260 53	242 01
Marin	.22	.24	155 02	184 99
Mariposa	.28	.156	539 00	400 00
Mendocino	.295	.295	209 60	233 12
Merced	.21	.22	242 18	248 83
Modoc	.30	.30	255 00	291 47
Mono	.02	.....	146 77	188 05
Monterey	.17	.19	252 55	268 44
Napa	.15	.19	159 26	191 08
Nevada	.40	.45	161 04	142 12
Orange	.23	.24	230 50	222 62
Placer	.22	.24	233 83	240 04
Plumas	.37	.05	392 11	559 96
Riverside	.44	.37	239 36	219 47
Sacramento	.256	.156	195 48	197 17
San Benito	.37	.37	172 53	183 48
San Bernardino	.371	.357	207 14	226 79
San Diego	.32	.34	207 46	204 40
San Francisco	.0791	.0929	139 19	140 17
San Joaquin	.16	.16	181 89	187 10
San Luis Obispo	.145	.203	252 03	257 16
San Mateo	.19	.26	212 94	230 19
Santa Barbara	.48	.18	256 59	243 50
Santa Clara	.25	.28	154 48	194 86
Santa Cruz	.295	.325	212 25	237 17
Shasta	.20	.223	237 43	233 94
Sierra	.10	.11	400 75	345 77
Siskiyou	.15	.27	241 94	266 71
Solano	.25	.23	235 81	270 79
Sonoma	.40	.40	232 43	220 60
Stanislaus	.27	.28	191 12	209 55
Sutter	.25	.25	345 28	276 46
Tehama	.15	.22	241 72	225 82
Trinity	.31	.44	304 93	354 94
Tulare	.23	.245	215 52	205 41
Tuolumne	.18	.25	199 42	211 93
Ventura	.14	.15	230 53	233 43
Yolo	.196	.227	203 34	214 60
Yuba	.20	.22	200 94	210 71
Totals	.....	.....	$212 90*	$211 82*

*Average for state.

SECTION IV. STATISTICS OF SECONDARY SCHOOLS.

TABLE NO. 20-A.

Number of Principals and Teachers, and Average Annual Salaries, for the School Year Ending June 30, 1923.

Counties	Principals				Regular teachers			
	Men		Women		Men		Women	
	No.	Average salary	No.	Average salary	No.	Average salary	No.	Average salary
Alameda	27	$2,853 11	5	$2,872 00	191	$2,250 57	432	$2,160 20
Alpine								
Amador	3	2,833 33			3	2,233 33	13	1,820 00
Butte	5	3,546 40			25	2,218 32	41	2,159 02
Calaveras	2	2,500 00			1	2,000 00	7	1,771 43
Colusa	5	3,100 00			10	2,325 00	19	1,873 68
Contra Costa	6	3,351 66	1	3,500 00	27	2,344 15	74	1,963 11
Del Norte	1	2,950 00					4	1,925 00
El Dorado	1	3,000 00			5	1,920 00	6	1,833 33
Fresno	23	3,443 56	3	3,233 33	117	2,420 68	191	2,057 26
Glenn	2	3,250 00	2	2,450 00	10	2,355 00	19	1,889 47
Humboldt	4	3,625 00			18	2,452 78	45	2,005 33
Imperial	3	4,250 00			31	2,414 52	38	2,066 32
Inyo	3	2,860 00	1	2,000 00	4	1,994 12	12	1,779 17
Kern	5	3,962 54			43	2,737 00	80	2,339 80
Kings	3	3,783 33			17	2,264 71	26	2,011 54
Lake	5	2,616 00			6	2,250 00	14	1,779 36
Lassen	1	3,100 00	1	2,600 00	4	2,400 00	14	1,907 14
Los Angeles	54	3,790 07	6	3,400 00	808	2,405 18	1,764	2,302 41
Madera	3	3,146 00			10	2,330 00	21	2,209 52
Marin	3	3,233 33			13	2,650 00	28	1,953 93
Mariposa	1	2,400 00					3	1,600 00
Mendocino	9	2,774 22			9	2,355 55	31	1,825 81
Merced	6	3,151 33			11	2,353 09	39	1,923 44
Modoc	3	2,783 33			5	2,130 00	13	1,819 23
Mono								
Monterey	5	4,000 00			21	2,464 29	36	2,072 03
Napa	3	3,316 66			10	2,820 00	18	1,880 55
Nevada	3	2,666 66			5	2,080 00	12	1,825 00
Orange	8	3,887 50			82	2,311 56	141	1,938 19
Placer	3	3,300 00			14	2,335 71	28	1,932 14
Plumas	1	3,360 00			2	2,467 50	5	2,152 00
Riverside	11	3,336 36			51	2,220 20	83	1,904 37
Sacramento	8	2,725 00			58	2,401 90	120	2,243 04
San Benito	1	4,000 00			5	2,080 00	14	1,900 71
San Bernardino	9	3,373 11	1*	2,800 00	62	2,211 42	94	1,925 56
San Diego	10	3,229 90			71	2,343 19	141	2,126 70
San Francisco	12	3,329 17			181	2,027 95	288	2,143 89
San Joaquin	8	3,416 25			51	2,504 56	81	2,341 61
San Luis Obispo	6	3,450 00			14	2,139 28	36	1,855 56
San Mateo	6	3,646 66			29	2,695 34	50	2,031 22
Santa Barbara	5	3,500 00	1	3,600 00	29	2,446 55	50	2,137 00
Santa Clara	8	3,356 25	1	1,250 00	63	2,254 24	146	1,955 02
Santa Cruz	3	2,956 66			22	2,383 45	39	2,065 74
Shasta	3	3,100 00			9	2,266 66	15	1,970 02
Sierra	1	3,333 30			4	2,050 00	2	2,000 00
Siskiyou	8	2,925 00			10	2,158 00	21	1,869 05
Solano	6	3,533 33			15	2,169 33	40	2,044 00
Sonoma	7	3,409 29			37	2,546 49	71	2,011 34
Stanislaus	10	3,266 00			30	2,240 83	81	1,934 07
Sutter	3	3,100 00			8	2,362 50	15	1,866 72
Tehama	3	3,400 00			9	2,111 11	22	1,943 18
Trinity	1	2,500 00			3	1,866 66	3	1,800 00
Tulare	11	3,181 81			51	2,269 80	85	1,869 24
Tuolumne	2	2,915 00			2	1,975 00	10	1,767 00
Ventura	6	3,187 50			17	2,124 26	38	1,945 79
Yolo	3	3,200 00			9	2,551 1 1	23	2,028 26
Yuba	2	3,400 00			8	2,220 00	15	1,899 20
Totals	354	$3,329 57*	22	$2,959 54*	2350	$2,340 73*	4757	$2,143 72*

*Average for state.

SECTION IV. STATISTICS OF SECONDARY SCHOOLS.

TABLE No. 20-B.

Number of Principals and Teachers, and Average Annual Salaries, for the School Year Ending June 30, 1924.

Counties	Principals				Regular Teachers			
	Men		Women		Men		Women	
	Number	Average salary	Number	Average salary	Number	Average salary	Number	Average salary
Alameda	25	$3,319 61	7	$3,082 82	197	$2,331 23	479	$2,206 98
Alpine								
Amador	3	2,900 00			4	2,262 50	12	1,900 00
Butte	5	3,740 40			28	2,263 57	38	2,029 13
Calaveras	2	2,550 00			3	2,083 33	7	1,731 00
Colusa	5	3,280 00			12	2,366 66	19	1,963 16
Contra Costa	6	3,819 29	1	3,750 00	34	2,442 14	87	2,094 42
Del Norte	1	2,800 00			2	2,200 00	3	2,116 66
El Dorado	1	3,400 00			5	2,100 00	6	1,900 00
Fresno	21	3,493 90	1	3,133 90	134	2,425 40	210	2,123 22
Glenn	2	3,325 00	2	2,350 00	10	2,380 00	21	1,945 24
Humboldt	4	3,625 00			26	2,425 00	44	1,989 50
Imperial	6	4,075 00			37	2,345 95	51	1,983 04
Inyo	3	2,880 00	1	2,000 00	4	2,050 00	15	1,825 33
Kern	5	3,580 66			53	2,560 06	78	2,311 15
Kings	3	3,816 66			19	2,242 10	28	2,020 10
Lake	5	2,696 00			5	2,388 00	15	1,860 02
Lassen	2	3,050 00			5	2,480 00	14	1,964 28
Los Angeles	58	3,868 90	7	3,532 18	958	2,358 28	2131	2,246 20
Madera	3	3,336 66			8	2,412 50	23	1,955 65
Marin	3	4,233 33			17	2,581 18	32	1,995 31
Mariposa	1	2,400 00					3	1,600 00
Mendocino	9	2,877 77			13	2,309 23	37	1,895 95
Merced	6	3,116 66			15	2,315 33	47	1,921 49
Modoc	3	3,033 33			6	2,233 33	13	1,803 84
Mono								
Monterey	5	4,050 00			24	2,501 25	39	2,107 69
Napa	3	3,283 33			10	2,370 00	24	1,925 00
Nevada	3	2,666 66			6	2,100 00	13	1,869 23
Orange	8	4,112 50			82	2,338 02	146	2,035 44
Placer	3	3,472 00			16	2,729 06	28	2,043 25
Plumas	1	3,960 00			2	2,400 00	8	2,167 50
Riverside	11	3,364 10			41	2,211 88	82	1,917 79
Sacramento	9	3,184 66	2	2,946 00	58	2,127 15	124	2,363 24
San Benito	1	4,000 00			6	2,633 33	13	2,000 00
San Bernardino	10	3,385 80	1	2,950 00	68	2,156 12	105	2,004 35
San Diego	12	3,253 75			83	2,427 21	157	2,162 89
San Francisco	11	3,515 45	1	3,420 00	198	2,096 10	283	2,198 92
San Joaquin	8	3,686 50			53	2,547 21	87	2,283 56
San Luis Obispo	6	3,475 00			20	2,343 60	33	1,943 94
San Mateo	6	3,829 66			39	2,413 43	57	2,085 40
Santa Barbara	6	3,600 00			34	2,458 82	57	2,151 40
Santa Clara	8	3,487 50	1	3,000 00	67	2,271 93	155	1,990 68
Santa Cruz	3	2,956 66			27	2,539 17	45	2,077 02
Shasta	3	3,186 00			10	2,339 00	16	1,990 66
Sierra	1	3,000 00			3	2,000 00	4	1,875 00
Siskiyou	8	3,012 50			7	2,297 14	24	1,952 08
Solano	6	3,380 00			16	2,222 50	40	2,066 00
Sonoma	7	3,450 00			43	2,482 00	89	1,914 38
Stanislaus	10	3,405 00			42	2,273 69	91	2,001 81
Sutter	3	3,333 33			9	2,466 66	19	1,936 84
Tehama	3	3,466 66			11	2,397 73	23	1,908 70
Trinity	1	2,600 00			1	1,900 00	5	1,810 00
Tulare	12	3,245 83			52	2,231 82	88	1,890 34
Tuolumne	2	3,055 00			3	2,116 66	11	1,896 36
Ventura	7	3,157 14			22	2,123 73	41	1,936 02
Yolo	3	3,400 00			11	2,600 00	24	2,125 00
Yuba	2	3,400 00			6	2,384 00	18	1,864 00
Totals	364	$3,465 29*	24	$3,131 29*	2665	$2,337 79*	5362	$2,149 81*

*Average for state.

SECTION V.

MISCELLANEOUS SCHOOL STATISTICS.

Table No. 21-A. Cost of Teachers' and Trustees' Institutes for the School Years Ending June 30, 1923, and June 30, 1924.

Table No. 21-B. General County Expenses for Schools: Salaries and Expenses of County Superintendent and Deputies for the School Years Ending June 30, 1923, and June 30, 1924.

Table No. 21-C. General County Expenses for Schools: Cost of County Boards of Education for the School Years Ending June 30, 1923, and June 30, 1924.

Table No. 21-D. Expenses of Offices of City Superintendents of Schools for the School Years Ending June 30, 1923, and June 30, 1924.

Table No. 21-E. Number and Percentage of Teachers Professionally Trained, for the School Years Ending June 30, 1923, and June 30, 1924.

Table No. 21-F. Segregation of Elementary Schools According to Number of Teachers Employed for the School Years Ending June 30, 1923, and June 30, 1924.

Table No. 21-G. Receipts and Expenditures of Superintendent of Public Instruction.

Table No. 21-H. Receipts and Expenditures of State Board of Education.

SECTION V. MISCELLANEOUS SCHOOL STATISTICS.

TABLE No. 21-A.

Cost of Teachers' and Trustees' Institutes for the School Years Ending June 30, 1923, and June 30, 1924.

Counties	Cost of teachers' institutes						Cost of trustees' institutes					
	School year 1922-1923			School year 1923-1924			School year 1922-1923			School year 1923-1924		
	Instructors	Other expenses	Total	Instructors	Other expenses	Total	Lectures	Other expenses	Total	Lectures	Other expenses	Total
Alameda	$500 00		$500 00	$510 00		$510 00						
Alpine												
Amador	305 05	$41 28	346 33	120 00		120 00						
Butte	395 89	92 24	488 13	170 00	$6 00	176 00	$88 00		$88 00	$125 00	$4 50	$129 50
Calaveras				171 94	31 00	202 94				47 72	56 00	103 72
Colusa	180 87	24 73	205 60	120 00		120 00	110 00	$45 65	155 65		70 23	70 23
Contra Costa	200 00		200 00	200 00	19 30	219 30	50 00	200 00	250 00			
Del Norte				200 00		200 00						
El Dorado	265 05	34 00	299 05	120 00		120 00						
Fresno	430 00	164 60	594 60	477 13		477 13	50 00	5 00	55 00			
Glenn	233 95	38 80	272 75	120 00		120 00						
Humboldt	200 00		200 00	350 00	330 08	680 08				40 00	80 00	120 00
Imperial	400 00	18 75	418 75	450 00	76 75	526 75	80 00	29 20	109 20	80 00		80 00
Inyo	250 00		250 00	260 00	16 25	276 25	15 00		15 00			
Kern	521 53	130 35	651 88	525 00	95 75	620 75	75 00		75 00			
Kings	150 00	46 08	196 08	200 00		200 00	27 00		27 00			
Lake		43 43	43 43	25 00	9 00	34 00				55 00		55 00
Lassen	283 91		283 91	267 77	1 50	269 27						
Los Angeles	5,190 00		5,190 00	5,155 00	20 82	5,175 82	100 00	379 90	479 90	190 00	253 22	443 22
Madera	139 94	51 69	191 63	350 00	3 86	353 86						
Marin	177 65	16 75	194 40	205 00	15 00	220 00					79 10	79 10
Mariposa	205 08	24 50	229 58	200 00		200 00	50 00		50 00			
Mendocino	270 00	232 50	502 50	100 00	101 00	201 00						
Merced	270 00	113 35	383 35	200 00		200 00						
Modoc	32 74	138 50	171 24	103 00	90 66	193 66						
Mono												
Monterey	250 00		250 00	259 00	37 50	287 50	65 38	10 00	75 38	125 00	10 00	135 00
Napa	240 00	97 00	337 00	200 00		200 00						

Nevada	126 40	123 12	249 52	299 15		299 15						
Orange	306 25	80 00	386 25	330 00	21 75	351 75						
Placer	195 35	95 66	291 01	120 00		120 00		35 50	35 50		24 09	24 09
Plumas	180 00	131 60	311 60	145 00		145 00				97 55	62 00	159 55
Riverside	350 00	67 75	417 75	200 00	8 25	208 25				120 00	124 60	244 60
Sacramento	198 10	32 50	230 60	155 00	49 25	204 25	100 00		100 00	50 00	72 00	122 00
San Benito	250 00		250 00	250 00		250 00					100 00	100 00
San Bernardino	350 00	20 25	370 25	600 00	49 05	649 05						
San Diego	685 00		685 00	175 00	25 00	200 00	75 00	115 00	190 00	75 00	39 50	114 50
San Francisco	600 00	873 50	1,473 50	1,351 50	483 30	1,834 80						
San Joaquin	400 00		400 00	200 00		200 00	42 25	3 00	45 25			
San Luis Obispo	250 00		250 00	335 00		335 00						
San Mateo	370 00	83 00	453 00	460 00	60 00	520 00						
Santa Barbara	451 25	50 25	501 50	440 00	28 60	468 60						
Santa Clara	200 00		200 00	581 50	135 30	716 80	50 00		50 00	50 00	5 25	55 25
Santa Cruz	253 60		253 60	275 00		275 00						
Shasta	274 86		274 86	522 30	69 00	591 30						
Sierra												
Siskiyou	351 71	24 50	376 21	325 14	65 05	390 19	229 85		229 85			
Solano	235 00	43 45	278 45	200 00		200 00						
Sonoma	200 00	37 50	237 50	230 00	20 00	250 00	217 40	6 80	224 20	38 31	87 00	125 31
Stanislaus	173 70		173 70	558 56	6 75	565 31	20 93		20 93			
Sutter	207 69	203 88	411 57	155 00		155 00				70 00	59 88	129 88
Tehama	100 00	131 80	231 80	200 00		200 00	60 41	100 00	160 41		139 00	139 00
Trinity	150 00	1 00	151 00	234 94	19 30	254 24						
Tulare	548 09	138 57	686 66	450 00	167 93	617 93				50 00	10 00	60 00
Tuolumne	262 00	53 92	315 92	240 00	47 30	287 30						
Ventura	860 00	23 75	883 75	410 00	76 00	486 00						
Yolo	254 68	45 32	300 00	130 00		130 00						
Yuba	317 82	86 97	404 79	120 00		120 00						
Totals	$20,193 16	$3,656 84	$23,850 00	$20,742 93	$2,186 30	$22,929 23	$1,506 22	$930 05	$2,436 27	$1,213 58	$1,276 37	$2,489 95

SECTION V. MISCELLANEOUS SCHOOL STATISTICS.

TABLE No. 21-B.

General County Expenses for Schools: Salaries and Expenses of County Superintendents and Deputies for the School Years Ending June 30, 1923, and June 30, 1924.

Counties	School year 1922-1923			School year 1923-1924		
	Salaries superintendent and deputies	Other expenses	Total	Salaries superintendent and deputies	Other expenses	Total
Alameda	$14,100 00	$2,991 95	$17,091 95	$13,500 00	$3,691 72	$17,191 72
Alpine	200 00	34 00	234 00	200 00	231 00	431 00
Amador	2,100 00	553 07	2,653 07	2,100 00	490 02	2,590 02
Butte	5,040 00	1,432 33	6,472 33	5,503 43	1,845 91	7,349 34
Calaveras	1,697 84	653 74	2,351 58	1,999 80	1,131 35	3,131 15
Colusa	2,794 43	1,757 94	4,552 37	3,400 00	1,950 23	5,350 23
Contra Costa	11,600 00	4,222 56	15,822 56	11,600 00	7,920 18	19,520 18
Del Norte	1,350 00	265 00	1,615 00	1,350 00	420 00	1,770 00
El Dorado	1,800 00	336 53	2,136 53	1,800 00	543 33	2,343 33
Fresno	20,342 30	15,407 20	35,749 50	22,600 00	13,242 70	35,842 70
Glenn	4,400 00	1,196 86	5,596 86	4,400 00	1,815 17	6,215 17
Humboldt	3,700 00	2,498 33	6,198 33	3,700 00	2,403 01	6,103 01
Imperial	6,434 82	1,742 95	8,177 77	6,633 37	1,140 43	7,773 80
Inyo	1,500 00	305 60	1,805 60	1,500 00	335 70	1,835 70
Kern	9,137 09	3,360 29	12,497 38	9,450 00	2,789 93	12,239 93
Kings	3,295 75	1,766 73	5,062 48	3,700 00	1,544 38	5,244 38
Lake	1,500 00	357 23	1,857 23	1,500 00	317 88	1,817 88
Lassen	1,800 00	615 00	2,415 00	1,800 00	733 70	2,533 70
Los Angeles	49,561 78	13,333 42	62,895 20	55,080 46	8,325 27	63,405 73
Madera	2,700 00	2,020 74	4,720 74	2,700 00	1,830 50	4,530 50
Marin	7,800 00	2,598 58	10,398 58	7,800 00	1,381 40	9,181 40
Mariposa	1,200 00	799 00	1,999 00	1,200 00	794 06	1,994 06
Mendocino	3,300 00	3,270 41	6,570 41	4,200 00	2,641 59	6,841 59
Merced	4,709 75	1,427 15	6,136 90	5,200 00	1,703 56	6,903 56
Modoc	1,650 00	699 52	2,349 52	1,500 00	795 80	2,295 80
Mono	400 00	360 00	760 00	400 00	296 72	696 72
Monterey	5,400 00	3,475 47	8,875 47	5,400 00	4,103 40	9,503 40
Napa	2,999 98	985 81	3,985 79	3,200 00	1,439 71	4,639 71
Nevada	2,110 37	514 67	2,625 04	2,700 00	422 65	3,122 65
Orange	3,201 99	1,240 57	4,442 56	2,525 00	1,026 78	3,551 78
Placer	3,300 00	1,673 62	4,973 62	3,300 00	1,286 12	4,586 12
Plumas	1,500 00	1,199 06	2,699 06	1,500 00	1,428 37	2,928 37
Riverside	5,741 95	2,442 57	8,184 52	6,625 00	2,495 02	9,120 02
Sacramento	6,566 09	2,303 10	8,869 19	7,125 00	2,783 86	9,908 86
San Benito	2,100 00	623 56	2,723 56	4,400 00	1,413 15	5,813 15
San Bernardino	5,580 00	2,395 00	7,975 00	5,580 00	2,715 59	8,295 59
San Diego	12,420 00	2,448 63	14,868 63	10,020 00	2,013 18	12,033 18
San Francisco	41,810 15	5,387 96	47,198 11	53,022 07	6,073 42	59,095 49
San Joaquin	5,445 00	3,729 44	9,174 44	5,482 50	2,004 58	7,487 08
San Luis Obispo	4,180 00	1,619 19	5,799 19	4,680 00	2,132 12	6,812 12
San Mateo	4,100 00	1,645 18	5,745 18	4,700 00	632 40	5,332 40
Santa Barbara	4,000 00	2,118 97	6,118 97	4,625 00	1,723 35	6,348 35
Santa Clara	6,300 00	2,286 79	8,586 79	6,900 00	2,640 69	9,540 69
Santa Cruz	3,300 00	1,699 07	4,999 07	3,300 00	1,170 93	4,470 93
Shasta	3,000 00	1,352 46	4,352 46	3,000 00	1,784 20	4,784 20
Sierra	625 00	225 32	850 32	625 00	272 23	897 23
Siskiyou	3,000 00	1,295 90	4,295 90	3,000 00	1,583 29	4,583 29
Solano	4,200 00	1,371 47	5,571 47	4,200 00	1,173 34	5,373 34
Sonoma	6,700 00	5,496 19	12,196 19	7,200 00	2,209 38	9,409 38
Stanislaus	5,910 53	2,129 92	8,040 45	6,500 00	2,551 00	9,051 00
Sutter	2,000 00	1,102 20	3,102 20	2,800 00	1,272 43	4,072 43
Tehama	3,000 00	1,550 00	4,550 00	3,000 00	1,399 56	4,399 56
Trinity	1,100 00	455 87	1,555 87	1,200 00	536 49	1,736 49
Tulare	7,910 39	3,098 03	11,008 42	8,500 00	3,353 03	11,853 03
Tuolumne	1,800 00	97 50	1,897 50	1,800 00	553 32	2,353 32
Ventura	3,500 00	2,255 47	5,755 47	3,100 00	877 54	3,977 54
Yolo	2,300 00	529 19	2,829 19	2,300 00	988 98	3,288 98
Yuba	3,100 00	847 71	3,947 71	3,100 00	877 54	3,977 54
Totals	$332,315 21	$123,582 02	$455,897 23	$360,226 63	$117,253 19	$477,479 82

SECTION V. MISCELLANEOUS SCHOOL STATISTICS.

TABLE No. 21-C.

General County Expenses for Schools: Cost of County Board of Education for the School Years Ending June 30, 1923 and June 30, 1924.

Counties	Board of education members per diem	1922-1923 traveling and other expenses	Total	Board of education members per diem	1923-1924 traveling and other expenses	Total
Alameda	$2,235 00	$782 64	$3,017 64	$2,335 00	$504 60	$2,839 60
Alpine	75 00	18 00	93 00	120 00	27 00	147 00
Amador	635 00	75 60	710 60	535 00	296 70	831 70
Butte	305 00	370 75	675 75	365 00	714 56	1,079 56
Calaveras	522 50	34 55	557 05	625 00	101 24	726 24
Colusa	905 00	258 20	1,163 20	450 00	737 80	1,187 80
Contra Costa	995 00	2,180 55	3,175 55	1,175 00	1,480 38	2,655 38
Del Norte	225 00	----------	225 00	450 00	15 00	465 00
El Dorado	420 00	265 63	685 63	475 00	25 60	500 60
Fresno	2,265 00	644 87	2,909 87	2,065 00	1,374 36	3,439 36
Glenn	740 00	234 60	974 60	710 00	331 60	1,041 60
Humboldt	390 00	221 00	611 00	600 00	289 00	889 00
Imperial	205 00	64 40	269 40	230 00	497 90	727 90
Inyo	275 00	101 50	376 50	240 00	723 30	963 30
Kern	680 00	2,657 81	3,337 81	700 00	2,421 55	3,121 55
Kings	1,105 00	859 40	1,964 40	835 00	630 80	1,465 80
Lake	190 00	26 20	216 20	225 00	25 00	250 00
Lassen	1,010 00	500 38	1,510 38	780 00	249 50	1,029 50
Los Angeles	2,000 00	952 68	2,952 68	2,000 00	1,237 48	3,237 48
Madera	855 00	113 52	968 52	975 00	649 25	1,624 25
Marin	340 00	137 20	477 20	435 00	520 00	955 00
Mariposa	345 00	102 95	447 95	300 00	110 60	410 60
Mendocino	632 50	536 24	1,168 74	765 00	1,036 86	1,801 86
Merced	1,625 00	306 10	1,931 10	1,505 00	616 06	2,121 06
Modoc	290 00	66 00	356 00	365 00	413 65	778 65
Mono	165 00	102 30	267 30	195 00	55 20	250 20
Monterey	665 00	268 95	933 95	750 00	2,295 35	3,045 35
Napa	1,265 00	----------	1,265 00	1,020 00	----------	1,020 00
Nevada	485 00	174 55	659 55	535 00	98 40	633 40
Orange	990 00	143 45	1,133 45	1,035 00	1,137 55	2,172 55
Placer	375 00	548 00	923 00	525 00	476 00	1,001 00
Plumas	815 00	355 40	1,170 40	595 00	793 05	1,388 05
Riverside	295 00	130 95	425 95	295 00	231 35	526 35
Sacramento	2,200 00	461 90	2,661 90	2,365 00	391 65	2,756 65
San Benito	750 00	171 00	921 00	750 00	306 60	1,056 60
San Bernardino	355 00	78 85	433 85	290 00	58 40	348 40
San Diego	535 00	446 18	981 18	735 00	723 14	1,458 14
San Francisco	5,040 00	98,498 49	[1]103,538 49	5,000 00	110,883 18	[1]115,883 13
San Joaquin	1,625 00	705 40	2,330 40	1,300 00	285 60	1,585 60
San Luis Obispo	1,010 00	22 70	1,032 70	1,305 00	97 35	1,402 35
San Mateo	1,125 00	180 25	1,305 25	975 00	297 85	1,272 85
Santa Barbara	540 00	631 80	1,171 80	625 00	627 55	1,252 55
Santa Clara	1 960 00	150 99	2,110 99	2,540 00	278 92	2,818 92
Santa Cruz	1,315 00	643 80	1,958 80	1,520 00	1,004 24	2,524 24
Shasta	705 00	326 86	1,031 86	695 00	384 04	1,079 04
Sierra	360 00	105 10	465 10	340 00	123 80	463 80
Siskiyou	705 00	1,493 90	2,198 90	985 00	1,556 65	2,541 65
Solano	890 00	282 94	1,172 94	910 00	603 34	1,513 34
Sonoma	970 00	537 58	1,507 58	670 00	320 88	990 88
Stanislaus	295 00	194 55	489 55	385 00	286 30	671 30
Sutter	975 00	307 95	1,282 95	875 00	914 88	1,789 88
Tehama	315 00	160 00	475 00	750 00	156 88	906 88
Trinity	230 00	180 60	410 60	260 00	26 00	286 00
Tulare	1,130 00	1,348 00	2,478 00	1,260 00	1,234 11	2,494 11
Tuolumne	942 00	66 20	1,008 20	625 00	88 00	713 00
Ventura	430 00	590 80	1,020 80	600 00	461 90	1,061 90
Yolo	784 75	465 60	1,250 35	660 00	461 55	1,121 55
Yuba	930 00	352 75	1,282 75	1,075 00	302 31	1,377 31
Totals	$50,436 75	$121,638 56	$172,075 31	$51,705 00	$141,991 76	$193,696 76

[1]Combined city and county.

SECTION V. MISCELLANEOUS SCHOOL STATISTICS.

TABLE No. 21-D.

Expenses of Offices of City Superintendents of Schools for the School Years Ending June 30, 1923, and June 30, 1924.

Counties	1922-1923			1923-1924		
	Salaries of superintendents and assistants	Traveling and other expenses	Total	Salaries of superintendents and assistants	Traveling and other expenses	Total
Alameda	$123,608 15	$20,325 46	$143,933 61	$40,502 50	$4,056 94	$44,559 44
Alpine						
Amador						
Butte	13,132 00	850 00	13,982 00	11,952 00	600 00	12,552 00
Calaveras						
Colusa						
Contra Costa	8,000 00	380 00	8,380 00	10,800 00	1,189 34	11,989 34
Del Norte						
El Dorado						
Fresno	[1]30,000 00	10,043 78	40,043 78	23,421 00	9,384 65	32,805 65
Glenn						
Humboldt	6,600 00	240 68	6,840 68	6,600 00	246 46	6,846 46
Imperial						
Inyo						
Kern	[1]11,000 00	2,363 16	13,363 16	11,922 30	2,852 93	14,775 23
Kings						
Lake						
Lassen						
Los Angeles	636,316 24	170,062 24	806,378 48	750,155 56	184,266 33	934,421 89
Madera						
Marin	3,600 00	66 89	3,666 89	3,600 00	621 64	4,221 64
Mariposa						
Mendocino						
Merced						
Modoc						
Mono						
Monterey	3,825 00	296 89	4,121 89	3,600 00	597 00	4,197 00
Napa						
Nevada	3,300 00	120 00	3,420 00	3,300 00	438 78	3,738 78
Orange	9,720 00	366 01	10,086 01	9,900 00	661 25	10,561 25
Placer						
Plumas						
Riverside	5,960 00	307 00	6,267 00	7,080 00	407 48	7,487 48
Sacramento	39,640 00	3,402 75	43,042 75	40,472 00	3,604 86	44,076 86
San Benito						
San Bernardino	[1]16,000 00	1,096 18	17,096 18	17,555 00	2,000 00	19,555 00
San Diego	14,000 00	404 59	14,404 59	28,340 00	321 40	28,661 40
San Francisco	(2)	(2)	(2)	(2)	(2)	(2)
San Joaquin	15,640 00	537 95	16,177 95	10,200 00	424 98	10,624 98
San Luis Obispo	4,220 00	181 51	4,401 51	5,379 93	184 30	5,564 23
San Mateo						
Santa Barbara	13,700 00		13,700 00	19,540 00	1,198 25	20,738 25
Santa Clara	13,400 00	976 37	14,376 37	18,124 15	571 35	18,695 50
Santa Cruz	5,280 00	480 00	5,760 00	6,504 10	488 67	6,992 77
Shasta						
Sierra						
Siskiyou						
Solano	8,470 00	941 69	9,411 69	9,240 00	1,254 70	10,494 70
Sonoma	4,400 00	3,696 84	8,096 84	3,400 00	1,589 06	4,989 06
Stanislaus	9,580 00	4,463 31	14,043 31	7,300 00	925 27	8,225 27
Sutter						
Tehama						
Trinity						
Tulare	6,540 00	1,153 10	7,693 10	6,775 00	735 78	7,510 78
Tuolumne						
Ventura	3,300 00	100 00	3,400 00	3,600 00	257 11	3,857 11
Yolo						
Yuba						
Totals	$1,009,231 39	$222,856 40	$1,232,087 79	$1,059,263 54	$218,878 53	$1,278,142 07

[1]Not separately reported. Estimated on basis of expenses of general control.
[2]Included as expenses of county board.

SECTION V. MISCELLANEOUS SCHOOL STATISTICS.

TABLE No. 21-E.

Number and Percentage of Teachers Professionally Trained, for the School Years Ending June 30, 1923, and June 30, 1924.

Counties	School year 1922-1923			School year 1923-1924		
	Number of teachers employed	Graduates of college or normal school		Number of teachers employed	Graduates of college or normal school	
		Number	Per cent		Number	Per cent
Alameda	1,599	1,512	94.6	1,657	1,460	87.8
Alpine	3	3	100.0	3	2	66.7
Amador	52	23	44.2	50	21	42.0
Butte	189	137	72.5	195	153	78.5
Calaveras	50	7	14.0	52	12	23.1
Colusa	60	51	85.0	60	49	81.7
Contra Costa	320	292	91.3	332	326	98.2
Del Norte	21	7	33.3	24	11	45.8
El Dorado	63	25	39.7	71	35	49.3
Fresno	824	730	88.6	861	790	91.5
Glenn	85	75	88.2	85	77	90.6
Humboldt	228	157	68.9	234	164	70.1
Imperial	234	219	93.6	229	222	96.9
Inyo	43	35	83.3	44	39	88.6
Kern	442	328	74.2	449	326	72.6
Kings	146	120	82.2	155	122	78.7
Lake	39	25	64.1	40	27	67.5
Lassen	74	33	44.6	73	43	58.9
Los Angeles	5,425	5,115	94.3	6,484	6,078	93.7
Madera	106	95	89.6	107	90	84.1
Marin	137	125	91.2	144	140	97.2
Mariposa	29	18	62.1	31	17	54.8
Mendocino	168	64	38.1	174	93	53.4
Merced	182	98	53.8	184	101	54.9
Modoc	51	23	45.1	54	18	33.3
Mono	12	9	75.0	11	6	54.5
Monterey	180	144	80.0	178	150	84.3
Napa	100	62	62.0	99	58	58.6
Nevada	67	32	48.5	62	30	48.4
Orange	491	460	93.7	582	523	89.9
Placer	113	79	69.9	116	92	79.3
Plumas	38	15	39.5	38	17	44.7
Riverside	305	262	85.9	320	265	82.8
Sacramento	517	311	60.2	534	316	59.2
San Benito	61	36	59.0	63	39	61.9
San Bernardino	455	380	83.5	469	394	84.0
San Diego	601	562	93.5	622	582	93.6
San Francisco	1,608	1,511	94.0	1,644	1,509	91.8
San Joaquin	426	225	52.8	439	237	53.0
San Luis Obispo	163	118	72.4	166	122	73.5
San Mateo	206	177	85.9	219	192	87.7
Santa Barbara	221	189	85.5	228	192	84.2
Santa Clara	515	507	98.4	540	529	98.0
Santa Cruz	157	126	80.2	163	119	73.0
Shasta	120	44	36.7	123	54	43.9
Sierra	16	12	75.0	16	12	75.0
Siskiyou	152	115	75.7	154	105	68.2
Solano	157	106	67.5	159	102	64.1
Sonoma	320	202	63.1	328	155	47.3
Stanislaus	295	224	75.9	300	236	78.7
Sutter	64	40	62.5	65	44	67.7
Tehama	94	77	81.9	93	75	80.6
Trinity	28	5	17.9	28	13	46.4
Tulare	396	316	79.8	412	308	74.8
Tuolumne	57	18	31.6	57	18	31.6
Ventura	201	182	90.5	210	192	91.4
Yolo	91	66	72.5	91	67	73.6
Yuba	64	35	54.7	60	33	55.0
Totals	*18,861	15,964	84.6	20,381	17,202	84.4

SECTION V. MISCELLANEOUS SCHOOL STATISTICS.

TABLE No. 21-F.

Segregation of Elementary Schools According to Number of Teachers Employed for the School Years Ending June 30, 1923, and June 30, 1924.

Counties	School year 1922-1923—Districts employing:						School year 1923-1924—Schools employing:					
	One teacher	Two teachers	Three teachers	Four teachers	Five teachers	Six teachers or more	One teacher	Two teachers	Three teachers	Four teachers	Five teachers	Six teachers or more
Alameda	15	6	4	1	4	13	16	5	4		4	109
Alpine	3						3					
Amador	27		1	2	1	1	26		2	1	1	1
Butte	40	7	2	2		5	42	8	5	2	1	10
Calaveras	31	6				1	33	6				1
Colusa	18	1	2	1	1	2	18	1	2	1		3
Contra Costa	21	15	6	1	1	9	21	15	6	1	2	23
Del Norte	12	2				1	13		1			1
El Dorado	44	3				1	44	3				1
Fresno	39	38	29	15	13	17	35	31	28	16	14	21
Glenn	23	11	3			2	24	9	3	1		2
Humboldt	70	22	5	3		5	69	25	5	3	1	4
Imperial	17	9	12	3		7	18	6	13	4		7
Inyo	18	3	1	1		1	14	6		2		1
Kern	51	18	9	4	1	10	51	18	13	3	4	26
Kings	10	12	3	3		6	11	13	2	3		6
Lake	14	2		1		2	13	3		1		2
Lassen	36	2				2	33	2				2
Los Angeles	41	19	8	10	3	62	48	28	24	29	22	375
Madera	28	9	5	1		5	24	8	7	1		4
Marin	29	5	1	1	3	5	30	4		2	2	6
Mariposa	27	1					26	2				
Mendocino	92	7	6	2	1	3	80	10	5	2	2	3
Merced	28	22	3	3		14	24	24	4	3		8
Modoc	38	3		1	1	3	35	3		1		1
Mono	8	2					9	1				
Monterey	46	14	1	6		6	37	15	2	6		6
Napa	32	6		1		6	32	5		1		3
Nevada	32	2				2	29	2				2
Orange	6	10	7	10	2	14	5	5	6	6	3	21
Placer	31	4	1	1	2	4	30	4	1	2	2	4
Plumas	26	3	1	1			26	2	1	1		
Riverside	35	11	4	3	2	16	34	12	5	2	1	28
Sacramento	35	15	3	4	1	15	33	21	5	4	3	26
San Benito	26	7	1		1	2	26	6	2			2
San Bernardino	40	4	3	6	2	13	39	4	3	5	1	16
San Diego	57	9	6	5		10	56	11	7	7	4	25
San Francisco						1	4		1	3		87
San Joaquin	42	19	9	5	2	8	41	15	13	7	2	7
San Luis Obispo	66	11	2		1	5	66	11	2		2	4
San Mateo	17	4	3	1	4	6	15	5	3		4	8
Santa Barbara	38	9	3	3		6	34	11	5	1	1	6
Santa Clara	23	16	7	8		16	23	10	7	3	3	20
Santa Cruz	42	7	1	2		3	31	10	1	2		3
Shasta	86	4	3		1	1	91	1	2	1		2
Sierra	13		1				13		1			
Siskiyou	64	8	4	1		5	62	7	5	2		5
Solano	36	7		1	1	5	32	10		1	1	4
Sonoma	99	20		4	2							
Stanislaus	12	18	7	3	1	11	13	19	6	4		11
Sutter	17	4	4	2		2	17	5	3	2		2
Tehama	39	8	1	1	1	2	39	8	1	1	1	2
Trinity	22		2				22		2			
Tulare	51	42	11	10	3	7	53	40	11	10	3	7
Tuolumne	25	2	2	1		2	25	2	2	1		2
Ventura	28	9	2	4	1	8	24	9	4	2	1	9
Yolo	31	4	2	2	1	3	30	5	2	2	2	2
Yuba	26	4		2		1	23	4		2		1
Totals	1,923	506	191	142	57	357	1,765	490	227	154	87	932

NOTE:—Table reports **Districts** for 1922-1923 and **Schools** for 1923-1924.

SECTION V. MISCELLANEOUS SCHOOL STATISTICS.

TABLE No. 21-G.

Receipts and Expenditures of Superintendent of Public Instruction.

	1922-1923	1923-1924
Receipts fees—		
Dental fees	$1,050 00	----------
Foreign language fees	78 00	----------
Miscellaneous receipts—		
Sale of school laws	115 80	$128 46
Sale of registers	96 00	2 97
Sale of old typewriters	65 00	----------
Sale of old paper	4 15	----------
Refund on travel	----------	6 98
Return of revolving fund	600 00	----------
Totals	$2,008 95	$138 41
Expenditures—salaries—		
Statutory—		
Superintendent of public instruction	$5,000 00	$5,000 00
Deputy superintendent of public instruction	3,000 00	3,000 00
Non-statutory—		
Clerical and office	16,814 08	12,415 76
Totals	$24,814 08	$20,415 76
Other expenditures—		
Printing	$12,713 24	$9,7 2 92
Travel	3,880 94	4,360 26
Postage	794 00	720 00
Telephone and telegraph	743 12	865 95
Freight, express and drayage	43 93	353 22
Orphans' textbooks	942 08	----------
Furniture	1,703 78	243 27
Office supplies	334 65	121 34
Sundries	374 05	*1,036 15
Extra help	----------	1,066 25
Migratory children	4,691 84	----------
Totals	$26,221 63	$18,529 36

*$600 of this amount represents revolving fund.

SECTION V. MISCELLANEOUS SCHOOL STATISTICS.

TABLE No. 21-H.

Receipts and Expenditures of State Board of Education.

			1922-1923	1923-1924
FEES.				
Life diplomas and credential fees—				
1. Available for use			$14,507 00	$19,500 00
2. Not available for use				14,118 00
High school text books—				
1. Available for use			1,890 00	
2. Not available for use				1,000 00
Total fees collected			$16,397 00	$34,618 00
EXPENDITURES.				
Administration, physical education, credentials—				
Salaries—				
Clerical and office			$33,813 71	$21,038 53
Per diem committee work			1,100 00	1,950 00
Commissioners and supervisors			26,478 17	13,781 88
Board members per diem			2,790 00	3,060 00
Totals			$64,181 88	$39,830 41
Support—				
Postage			$2,094 48	$1,725 45
Telephone and telegraph			621 44	524 21
Commissioners and supervisors (travel)			7,330 04	3,681 01
Board members expenses			2,622 89	2,450 86
Printing			8,231 82	2,484 02
Critic readers H. S. filing fees			645 00	534 00
Miscellaneous			3,908 64	2,121 29
Materials and supplies			1,614 61	925 02
Seasonal help				3,511 62
Totals			$27,068 92	$17,957 48
New equipment			$2,195 37	$342 76
Contingent fund (credentials department)—				
Office furniture				$48 03
Salaries				7,377 44
Printing				1,832 80
Miscellaneous				644 33
Totals				$9,902 60
Total expenditures—				
Salaries appropriation			$64,181 88	$39,830 41
Support appropriation			27,068 92	17,957 48
New equipment appropriation			2,195 37	342 76
Contingent (credentials department)				9,902 60
Totals			$93,446 17	$68,033 25
VOCATIONAL EDUCATION FUND.				
Vocational education—				
(a) Salaries of teachers, supervisors and directors of agricultural subjects			$74,566 18	$85,218 50
(b) Salaries of teachers of trade, home economics and industrial subjects			143,295 86	165,400 56
(c) Training teachers:	1922-1923	1923-1924		
Agriculture	$17,669 04	$19,239 82		
Home economics	14,977 90	13,258 86		
Trade and industrial subjects	31,549 96	32,605 00		
			64,196 90	65,103 68
Totals			*$282,058 94	*$315,722 74

*Of this sum, half is to be charged against the federal government, under the Smith-Hughes Act.

SECTION VI.

STATE TEXTBOOKS.

Table No. 22-A. Number of Textbooks Distributed Free to Elementary Schools, Cost per Copy of Royalty for Use of Plates, and Amount of Royalty, for the School Years Ending June 30, 1923, and June 30, 1924.

Table No. 22-B. Number of Textbooks Sold to Dealers, Orphan Asylums, Private Schools and Individuals, and Disposition of Amount Received for Such Sales, for the School Years Ending June 30, 1923, and June 30, 1924.

Table No. 22-C. Complete List of State Textbooks, June 30, 1924, With Cost of Manufacture, Royalty, and Price f. o. b. Sacramento.

Table No. 22-D. Summary of Textbooks Sold and Distributed Free, 1887 to 1924.

Table No. 22-E. Financial Statement of School Book Fund for the Fiscal Year July 1, 1922, to June 30, 1923.

Table No. 22-F. Financial Statement of School Book Fund for the Fiscal Year July 1, 1923, to June 30, 1924.

TABLE No. 22-A.

Number of Textbooks Distributed Free to Elementary Schools, Cost per Copy of Royalty for Use of Plates and Amount of Royalty for the School Years Ending June 30, 1923, and June 30, 1924.

Books	July 1, 1922, to June 30, 1923			July 1, 1923, to June 30, 1924		
	Number of books	Royalty per copy	Amount of royalty	Number of books	Royalty per copy	Amount of royalty
Primer	28,091	04	$1,123 64	26,706	04	$1,068 24
First Reader	22,777	045	1,024 97	28,478	045	1,281 51
Second Reader	18,269	05	813 45	38,335	05	1,916 75
Third Reader	19,007	0525	997 87	27,164	0525	1,426 11
Fourth Reader	17,874	08	1,429 92	20,606	08	1,648 48
Fifth Reader	15 421	09	1,387 89	20,020	09	1,801 80
Sixth Reader	14,649			18,412		
Seventh Reader	12,732			16,647		
Eighth Reader	14,559			15,096		
Speller—One	79,833			92,415		
Speller—Two	71,849			82 225		
Speller—Manual	185					
Arithmetic—One	36,833	0925	3,407 04	38,731	.0925	3,582 61
Arithmetic—Two	29,524	1025	3,026 21	34,768	.1025	3,564 72
Arithmetic—Three	26,542	1125	2,985 97	27,194	.1125	3,059 32
Studies in English—One	16,718	045	752 31	18,927	039	738 15
Studies in English—Two	27,563	067	1,860 59	32,060	0585	1,875 51
Studies in English—Three	22,887	09	2,059 83	24,698	078	1,926 44
Beginner's History	23,302	074	1,724 35	30,702	074	2,271 94
Advanced History	21,089	29	6,118 71	24,232	29	7,027 28
Advanced Geography—Part 1	74,974	216	16,194 39	21,283	216	4,597 12
Advanced Geography—Part 2	71,345	224	15,981 27	24,825	224	5,560 80
Book of Maps	175,656	05	8,797 80	41,197	05	2,059 85
Copy Book—One	23,403	00875	204 77	28,783	00875	251 85
Copy Book—Two	23,548	00875	206 04	26,098	00875	228 35
Copy Book—Three	27,905	00875	244 16	30,577	00875	267 54
Copy Book—Four	27,244	00875	238 38	31,141	00875	272 48
Copy Book—Five	26,262	00875	229 80	32,154	00875	281 34
Copy Book—Six	24,263	00875	212 30	28,207	00875	246 81
Copy Book—Seven	22,205	00875	194 30	22,870	00875	200 98
Copy Book—Eight	17,484	00875	152 98	18,000	00875	157 57
Music Reader—One	24,373	06	1,462 38	32,141	06	1,928 46
Music Reader—Two	28,329	07	1,983 03	33,046	07	2,313 22
Music Reader—Three	16,631	08	1,330 48	23,109	08	1,848 72
Music Manual—One	1,105	25	276 25	520	25	130 00
Music Manual—Two	926	25	231 50	479	25	119 75
Music Manual—Three	740	25	185 00	491	25	122 75
Primer of Hygiene	8,851		531 06			
Civics	3,134		391 75			
Totals	1,118,392		$77,860 30	1,012,446		$53,775 45

TABLE No. 22-B.

Number of Textbooks Sold to Dealers, Orphan Asylums, Private Schools and Individuals, and Disposition of Amount Received for Such Sales, for the School Years Ending June 30, 1923. to June 30, 1924.

Books	July 1, 1922, to June 30, 1923				July 1, 1923, to June 30, 1924			
	Number of books	Amount of sales	Proceeds to school book fund	Proceeds to royalty fund	Number of books	Amount of sales	Proceeds to school book fund	Proceeds to royalty fund
Primer	2,724	$638 08	$529 12	$108 96	3,114	$679 74	$555 18	$124 56
First Reader	1,334	360 18	300 17	60 01	2,518	629 50	516 20	113 30
Second Reader	1,109	332 70	277 25	55 45	2,192	613 76	504 16	109 60
Third Reader	1,187	457 38	395 07	62 31	1,587	507 84	424 53	83 31
Fourth Reader	1,008	466 08	385 44	80 64	1,134	446 37	355 65	90 72
Fifth Reader	674	363 96	303 30	60 66	531	262 14	214 35	47 79
Sixth Reader	588	245 48	245 48	.....	751	262 85	262 85	.....
Seventh Reader	732	311 18	311 18	.....	776	256 08	256 08	.....
Eighth Reader	756	272 16	272 16	.....	628	222 42	222 42	.....
Speller—One	5,413	270 65	270 65	.....	4,224	211 20	211 20	.....
Speller—Two	4,192	251 52	251 52	.....	3,530	211 80	211 80	.....
Speller—Manual	125	18 75	18 75	.....	129	19 35	19 35	.....
Arithmetic—One	2,117	783 29	587 46	195 83	2,782	989 86	732 53	257 33
Arithmetic—Two	1,818	690 84	504 50	186 34	2,315	864 54	627 25	237 29
Arithmetic—Three	1,510	619 10	449 23	169 87	1,288	520 66	375 75	144 91
Studies in English—One	847	211 90	173 78	38 12	682	150 04	120 29	29 75
Studies in English—Two	1,314	537 00	448 31	88 69	1,681	605 16	494 19	110 97
Studies in English—Three	1,205	518 15	409 70	108 45	1,381	590 68	470 17	120 51
Beginner's History	1,018	509 00	433 67	75 33	1,581	781 70	664 18	117 52
Advanced History	909	790 83	527 22	263 61	1,006	865 16	573 42	291 74
Advanced Geography–Pt. 1	675	428 87	283 07	145 80	1,506	1,009 02	683 71	325 31
Advanced Geography–Pt. 2	450	291 69	190 88	100 81	1,423	981 87	663 14	318 73
Book of Maps	590	80 00	55 00	25 00	872	144 42	100 82	43 60
Copy Book—One	758	22 74	16 12	6 62	705	21 15	14 98	6 17
Copy Book—Two	822	24 66	17 47	7 19	580	17 40	12 32	5 08
Copy Book—Three	817	24 51	17 36	7 15	864	25 92	18 38	7 54
Copy Book—Four	743	22 29	15 78	6 51	760	22 80	16 14	6 66
Copy Book—Five	480	14 40	10 21	4 19	513	15 39	10 90	4 49
Copy Book—Six	565	16 95	12 02	4 93	537	16 11	11 40	4 71
Copy Book—Seven	410	12 30	8 73	3 57	498	14 94	10 57	4 37
Copy Book—Eight	292	11 73	8 31	3 42	464	13 92	9 87	4 05
Music Reader—One	186	52 08	40 92	11 16	394	106 38	82 74	23 64
Music Reader—Two	230	73 60	57 50	16 10	475	142 50	109 25	33 25
Music Reader—Three	160	54 40	41 60	12 80	297	100 98	77 22	23 76
Music Manual—One	26	16 90	10 40	6 50	26	16 90	10 40	6 50
Music Manual—Two	16	11 20	7 20	4 00	18	12 60	8 10	4 50
Music Manual—Three	54	35 10	21 60	13 50	34	22 10	13 60	8 50
Primer of Hygiene	307	85 96	67 54	18 42	.....	.....	.....	.....
Civics	63	30 87	23 00	7 87	.....	.....	.....	.....
Totals	38,134	$9,958 48	$7,998 67	$1,959 81	43,796	$12,375 25	$9,665 09	$2,710 16

TABLE No. 22-C.

Complete List of State Textbooks, June 1924, Cost of Manufacture per Book, Royalty, and Price f.o.b. Sacramento

Books	Cost of manufacture	Royalty	Price
Primer	.19	.04	23 cents
First Reader	.205	.045	25 cents
Second Reader	.23	.05	28 cents
Third Reader	.2675	.0525	32 cents
Fourth Reader	.29	.08	37 cents
Fifth Reader	.30	.09	39 cents
Sixth Reader	.35		35 cents
Seventh Reader	.33		33 cents
Eighth Reader	.33		33 cents
Speller—One	.05		5 cents
Speller—Two	.06		6 cents
Speller—Manual	.15		15 cents
Arithmetic—One	.2375	.0925	33 cents
Arithmetic—Two	.2575	.1025	36 cents
Arithmetic—Three	.2775	.1125	39 cents
Studies in English—One	.181	.039	22 cents
Studies in English—Two	.3015	.0585	36 cents
Studies in English—Three	.342	.078	42 cents
Beginner's History	.396	.074	47 cents
Advanced History	.57	.29	86 cents
Advanced Geography—Part 1	.454	.216	67 cents
Advanced Geography—Part 2	.466	.224	69 cents
Book of Maps	.13	.05	18 cents
Copy Book—One	.02125	.00875	3 cents
Copy Book—Two	.02125	.00875	3 cents
Copy Book—Three	.02125	.00875	3 cents
Copy Book—Four	.02125	.00875	3 cents
Copy Book—Five	.02125	.00875	3 cents
Copy Book—Six	.02125	.00875	3 cents
Copy Book—Seven	.02125	.00875	3 cents
Copy Book—Eight	.02125	.00875	3 cents
Music Reader—One	.21	.06	27 cents
Music Reader—Two	.23	.07	30 cents
Music Reader—Three	.26	.08	34 cents
Music Manual—One	.40	.25	65 cents
Music Manual—Two	.45	.25	70 cents
Music Manual—Three	.40	.25	65 cents

TABLE No. 22-D.

Summary of Textbooks Sold and Distributed Free, 1887-1924.

Period	Number of books sold column (a)	Number of books distributed free column (b)	School book fund column (c)	Royalty fund column (d)	Amount column (e)
Prior to July 1, 1904	4,052,327		$1,429,297 52	$10,821 75	$1,440,119 27
July 1, 1904, to June 30, 1906	857,749		310,105 09	87,471 36	395,272 38
July 1, 1906, to June 30, 1908	1,072,575		292,748 67	101,880 05	394,628 72
July 1, 1908, to June 30, 1910	1,178,594		247,944 36	75,859 56	323,803 92
July 1, 1910, to June 30, 1911	683,079		152,341 82	41,922 60	194,264 42
July 1, 1911, to June 30, 1912	683,527		159,113 15	42,100 08	201,213 23
July 1, 1912, to June 30, 1913	476,241	477,933	78,352 70	55,321 72	106,037 84
July 1, 1913, to June 30, 1914	13,526	1,379,154	1,645 48	86,140 38	2,319 56
July 1, 1914, to June 30, 1915	35,957	493,159	4,628 53	30,188 87	6,761 68
July 1, 1915, to June 30, 1916	32,766	491,970	4,331 32	26,493 15	6,370 06
July 1, 1916, to June 30, 1917	41,463	902,551	5,141 63	34,891 05	7,352 99
July 1, 1917, to June 30, 1918	31,431	651,238	4,358 21	32,677 05	6,141 85
July 1, 1918, to June 30, 1919	26,630	626,089	4,040 02	49,366 80	5,469 82
July 1, 1919, to June 30, 1920	41,201	1,150,281	6,238 47	54,015 04	7,840 95
July 1, 1920, to June 30, 1921	42,024	916,970	7,630 51	71,586 92	9,337 67
July 1, 1921, to June 30, 1922	40,393	1,186,195	10,575 40	79,849 90	12,738 25
July 1, 1922, to June 30, 1923	38,233	1,118,392	7,998 67	79,820 11	9,958 48
July 1, 1923, to June 30, 1924	43,796	1,012,446	9,665 09	56,485 61	12,375 25
Totals	9,391,512	10,706,381	$2,736,156 64	$1,016,892 00	$3,141,961 34

Columns (a) and (b) are self-explanatory.

Column (c) is the total amount of money paid into the school book fund as a result of the sale of books listed in column (a).

Column (d) is the amount of money paid to the textbook companies for the use of plates in the manufacture of all state text books. This includes both books sold and books distributed free.

Column (e) is the total amount of mone paid into the state treasury as the result of sales, column (a).

TABLE No. 22-E.

Financial Statement of Schoolbook Fund from July 1, 1922, to June 30, 1923.

Month	Expenditures						Receipts			
	Royalty	Printing	Freight and postage	Salary	Materials and supplies	Total	Sales	Refund	Total	Balance
Balance from seventy-third fiscal year										$250,193 27
July		$1,708 62	$1,653 32	$300 25		$3,662 19	$1,305 08		$1,305 08	
August		5,584 90	1,892 70	273 00	$32 10	7,782 70	2,106 33	$202 01	2,308 34	
September		4,801 78	927 21	245 00		5,973 99	2,131 09	68 41	2,199 50	
October	$57,598 59	14,067 89	684 71	245 00	28 80	72,624 99	1,144 70		1,144 70	
November		5,749 74	340 79	245 00	14 60	6,350 13	377 05		377 05	
December	6,952 75	7,529 25	861 33	245 00	80 15	15,668 48	493 07		493 07	
January		32,696 08	477 81	245 00		33,417 94	835 29	236 88	1,072 17	
February		15,763 12	155 00	245 00	17 75	16,180 79	501 50		501 50	
March		11,886 59	850 47	177 25		12,914 31	320 11		320 11	
April	11,974 71	4,388 35	197 97	170 00		16,731 03	84 45		84 45	
May		11,568 57	265 28	170 00		12,003 85	546 49	225 14	771 63	
June	7,406 73	49,310 82	648 69	170 00		57 536 24	113 32	273 39	386 71	
Totals	$83,932 78	$165,055 71	$8,955 28	$2,730 50	$173 40	$260,846 64	$9,958 48	$1,005 83	$10,964 31	$10,964 31
Grand total										261,157 58
Expenditures										260,846 64
Balance										$310 94

TABLE No. 22-F.

Financial Statement of Schoolbook Fund from July 1, 1923, to June 30, 1924.

Month	Expenditures						Receipts			
	Royalty	Printing	Freight and Postage	Salary	Materials and Supplies	Total	Sales	Refund	Total	Balance
Balance from seventy-fourth fiscal year										$310 94
Schoolbook appropriation										576,983 33
Total amount in schoolbook fund										$577,294 27
July			$1,177 65	$693 19	$29 60	$1,900 44	$774 29		$774 29	
August		$11,643 28	1,218 96	746 25		13,608 49	3,046 03		3,046 03	
September	$29,958 50		626 86	373 00		30,958 36	2,646 52		2,646 52	
October		38,857 22	436 61	674 25		39,968 08	2,036 58	$22 51	2,059 09	
November		168 15	384 81	519 00	717 10	1,789 06	395 08		395 08	
December	5 184 79	13 35	323 31	711 00	1,163 90	7,696 35	342 41		342 41	
January		12,027 50	956 78	609 50	615 30	14,209 08	1,061 85		1,061 85	
February		48,947 47	1,003 32	474 00	10 92	50,435 71	609 90	589 07	1,198 97	
March	17,782 26	15,436 77	410 80	450 00	6 50	34,086 33	563 58		563 58	
April		7 681 28	199 53	426 50	8 30	8,315 61	693 57	13 75	707 32	
May		42,875 63	331 42	444 00	9 50	43,660 55	191 30		191 30	
June	3,231 49	57,896 97	204 75	702 00	13 05	62,048 26	14 14		14 14	
Totals	$56,457 04	$235,547 62	$7,274 80	$6,822 69	$2,574 17	$308,676 32	$12,375 25	$625 33	$13,000 58	$13,000 58
Grand total										$590,294 85
Expenditures										308,676 32
Balance										$281,618 53

SECTION VII.

STATE TEACHERS COLLEGES.

Table No. 23-A. Number of Teachers and Supervisors Employed for the Years Ending June 30, 1923, and June 30, 1924.

Table No. 23-B. Enrollment for the Year Ending June 30, 1923.

Table No. 23-C. Enrollment for the Year Ending June 30, 1924.

Table No. 23-D. Graduates for the Year Ending June 30, 1923.

Table No. 23-E. Graduates for the Year Ending June 30, 1924.

Table No. 23-F. Elementary and Kindergarten Training School Enrollment for the Years Ending June 30, 1923, and June 30, 1924.

Table No. 23-G. Area of Grounds and Valuation of Property as of June 30, 1923.

Table No. 23-H. Area of Grounds and Valuation of Property as of June 30, 1924.

Table No. 23-I. Books in Libraries for the Years Ending June 30, 1923, and June 30, 1924.

Table No. 23-J. Statements of Expenditures for the Year Ending June 30, 1923.

Table No. 23-K. Statements of Expenditures for the Year Ending June 30, 1924.

SECTION VII. STATISTICS OF STATE TEACHERS COLLEGES.

TABLE No. 23-A .

Number of Teachers and Supervisors Employed for the Years Ending June 30, 1923, and June 30, 1924.

Name of college	School year 1922-1923						School year 1923-1924					
	Men		Women		Total		Men		Women		Total	
	Full time	Part time	Full time	Part time	Full time	Part time	Full time	Part time	Full time	Part time	Full time	Part time
Chico	12	1	17	1	29	2	12	1	13	1	25	2
Fresno	19	2	23	4	42	6	25	1	22	1	47	2
Humboldt	7	1	7	.....	14	1	8	.....	6	.....	14	.....
San Diego	12	6	25	1	37	7	13	6	23	2	36	8
San Francisco	7	.....	44	6	51	6	7	8	35	6	42	14
San Jose	12	3	48	5	60	8	11	8	39	12	50	20
Santa Barbara	11	9	12	8	23	17	11	5	11	10	22	15
Totals	80	22	176	25	256	47	87	29	149	32	236	61

TABLE No. 23-B.

Enrollment for the Year Ending June 30, 1923 (Including Teacher Training and General Collegiate Students).

Name of college	Summer 1922			Regular semester			Extra hour classes			Total individuals (duplicates eliminated)		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
Chico	56	244	300	94	332	426	.....	.....	.....	119	510	629
Fresno	24	189	213	261	839	1,100	10	125	135	270	974	1,244
Humboldt	6	53	59	34	112	146	.....	.....	.....	37	145	182
San Diego	34	470	504	167	428	595	3	85	88	204	901	1,105
San Francisco	7	831	838	3	698	701	3	290	293	13	1,337	1,350
San Jose	41	532	573	146	948	1,094	8	177	185	189	1,538	1,727
Santa Barbara	70	154	224	195	291	486	5	86	91	158	464	622
Totals	238	2,473	2,711	900	3,648	4,548	29	763	792	990	5,869	6,859

TABLE No. 23-C.

Enrollment for the Year Ending June 30, 1924 (Including Teacher Training and General Collegiate Students).

Name of college	Summer 1923			Regular semester			Extra hour classes			Total individuals (duplicates eliminated)		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
Chico	31	181	212	92	323	415	12	89	101	128	528	656
Fresno	28	225	253	314	638	952	77	561	638	420	1,383	1,803
Humboldt	3	105	108	24	137	161	.....	.....	.....	27	181	208
San Diego	28	342	370	171	379	550	30	248	278	229	969	1,198
San Francisco	9	*213	*222	3	801	804	5	462	*467	10	1,389	*1,399
San Jose	45	575	620	158	932	1,090	13	154	167	204	1,459	1,663
Santa Barbara	99	145	244	127	251	378	2	19	21	209	380	589
Totals	243	*1,786	*2,029	889	3,461	4,350	139	1,533	*1,672	1,227	6,289	*7,516

*Does not include 574 non-credit students.

SECTION VII. STATISTICS OF STATE TEACHERS COLLEGES.

TABLE No. 23-D.

Graduates for the Year Ending June 30, 1923.

Name of college	Bachelor of Arts degree				Credentials without degree							Junior college	Total graduates
	Elem. Ed.	Elem. and J. H. S. Ed.	Home Econ.	Home and Comm. Mech.	Elem.	Kind. Prim.	Art	Home Econ.	Man. Arts	Music	Phys. Ed.		
Chico—													
Men					25								25
Women					98	16		3					117
Total					123	16		3					142
Fresno—													
Men	1				9							19	29
Women	7				103	9	2	5		9	1	12	148
Total	8				112	9	2	5		9	1	31	177
Humboldt—													
Men					5							6	11
Women					43								43
Total					48							6	54
San Diego—													
Men					2							19	21
Women					105							11	116
Total					107							30	137
San Francisco—													
Men					247	15							262
Women					247	15							262
Total													
San Jose—													
Men		5			17				1			13	36
Women		5			210	86		15	1	4	3	11	335
Total		10			227	86		15	2	4	3	24	371
Santa Barbara—													
Men				1	1				10			5	17
Women			9		22		2	11				3	47
Total			9	1	23		2	11	10			8	64
Grand Total—													
Men	1	5		1	59				11			62	139
Women	7	5	9		828	126	4	34	1	13	4	37	1,068
Men and women	8	10	9	1	887	126	4	34	12	13	4	99	1,207

SECTION VII. STATISTICS OF STATE TEACHERS COLLEGES.

TABLE No. 23-E.

Graduates for the Year Ending June 30, 1924.

Name of college	Bachelor of Arts degree					Credentials without degree								Junior college	Total graduates
	Elem. Ed.	Elem. and J. H. S. Ed.	Home Econ.	Home and Comm. Mech.	In Music	Elem.	Kind. Prim.	J. H. S.	Art	Home Econ.	Manual Arts	Music	Phys. Ed.		
Chico—															
Men						13								2	15
Women	4					92	11			7				2	116
Total	4					105	11			7				4	131
Fresno—															
Men		1				6		1						23	31
Women		4	2		1	71	5	1	1	1		5	2	28	121
Total		5	2		1	77	5	2	1	1		5	2	51	152
Humboldt—															
Men						6									6
Women						34								3	37
Total						40								3	43
San Diego—															
Men		2				1								27	30
Women		10				93								11	114
Total		12				94								38	144
San Francisco—															
Men						2									2
Women						201	30								231
Total						203	30								233
San Jose—															
Men		5				8						1		13	27
Women		12				105	47		3	12		10	7	14	210
Total		17				113	47		3	12		11	7	27	237
Santa Barbara—															
Men				3		1			1		6			7	18
Women			12			20				5		2		8	47
Total			12	3		21			1	5	6	2		15	65
Grand Total—															
Men		8		3		37		1	1		6	1		72	129
Women	4	26	14		1	616	93	1	4	25		17	9	66	876
Men and women	4	34	14	3	1	653	93	2	5	25	6	18	9	138	1,005

SECTION VII. STATISTICS OF STATE TEACHERS COLLEGES.

TABLE No. 23-F.

Elementary and Kindergarten Training School Enrollment for the Years Ending June 30, 1923, and June 30, 1924

Name of college	School year 1922-1923						School year 1923-1924					
	Elementary			Kindergarten			Elementary			Kindergarten		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Chico	129	146	275	25	30	55	113	124	237	22	26	48
Fresno	137	174	311	------	------	------	130	186	316	------	------	------
Humboldt	57	52	109	------	------	------	41	54	95	------	------	------
San Diego	144	129	273	------	------	------	118	105	223	------	------	------
San Francisco	218	219	437	85	88	173	211	202	413	34	54	88
San Jose	194	221	415	30	55	85	192	203	395	38	63	101
Santa Barbara*	------	------	------	------	------	------	------	------	------	------	------	------
Totals	879	941	1,820	140	173	313	805	874	1,679	94	143	237

*Used Santa Barbara city schools by special contract until June 30, 1924.

TABLE No. 23-G.

Area of Grounds and Valuation of Property as of June 30, 1923.

Name of college	Area of grounds (acres)	Valuation of grounds	Valuation of buildings	Valuation of furniture and equipment	Valuation of library books	Total valuation of all property
Chico	18.25	$67,600 00	$242,687 00	$16,000 00	$17,350 00	$343,637 00
Fresno	25.00	50,000 00	380,000 00	30,000 00	12,500 00	472,500 00
Humboldt	51.00	5,100 00	264,228 12	47,046 69	5,990 03	322,364 84
San Diego	16.50	118,676 56	211,487 00	68,818 51	23,750 24	422,732 31
San Francisco	5.85	300,400 00	130,000 00	46,651 97	25,183 61	502,235 58
San Jose	18.30	50,000 00	589,000 00	60,000 00	43,000 00	742,000 00
Santa Barbara	13.00	25,000 00	150,000 00	40,000 00	7,000 00	222,000 00
Totals	147.90	$616,776 56	$1,967,402 12	$308,517 17	$134,773 88	$3,027,469 73

TABLE No. 23-H.

Area of Grounds and Valuation of Property as of June 30, 1924.

Name of college	Area of grounds (acres)	Valuation of grounds	Valuation of buildings	Valuation of furniture and equipment	Valuation of library books	Total valuation of all property
Chico	30.00	$82,600 00	$252,687 00	$16,000 00	$17,350 00	$368,637 00
Fresno	25.00	50,000 00	395,449 18	62,818 09	16,273 21	524,540 48
Humboldt	52.00	6,375 00	264,228 12	46,699 28	6,290 03	323,592 43
San Diego	17.00	117,608 56	220,082 27	71,426 33	27,219 66	436,336 82
San Francisco	5.85	300,400 00	200,000 00	50,854 27	26,680 33	577,934 60
San Jose	18.30	50,000 00	750,000 00	63,000 00	45,000 00	908,000 00
Santa Barbara	13.00	25,000 00	150,000 00	40,000 00	3,000 00	218,000 00
Totals	161.15	$631,983 56	$2,232,446 57	$350,797 97	$141,813 23	$3,357,041 33

TABLE No. 23-I.

Books in Libraries for the Years Ending June 30, 1923, and June 30, 1924.

Name of college	On hand June 30, 1922	Year 1922-1923			On hand June 30, 1923	Year 1923-1924			On hand June 30, 1924
		Purchased	Donated	Lost or destroyed		Purchased	Donated	Lost or destroyed	
Chico	22,481	851	470	4,798	19,004	1,316	------	2,046	18,274
Fresno	10,961	2,885	79	88	13,837	1,371	10	1,028	14,190
Humboldt	5,844	195	33	15	6,057	81	65	15	6,188
San Diego	21,698	2,323	95	1,454	22,662	1,993	223	76	24,802
San Francisco	42,110	2,460	1,795	250	46,115	1,609	549	236	48,037
San Jose	30,592	2,150	------	785	31,957	1,596	------	330	33,223
Santa Barbara	6,047	484	71	55	6,547	337	49	42	6,891
Totals	139,733	11,348	2,543	7,445	146,179	8,303	896	3,773	151,605

SECTION VII. STATISTICS OF STATE TEACHERS COLLEGES.

TABLE No. 23-J.

State Teachers College of Chico—Statement of Expenditures for the Year Ending June 30, 1923.

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Instruction	$2,890 94	$69,359 02	$1,626 49	$4,420 63	$78,297 08
Administration and general	170 38	9,999 96	3 192 22	154 50	13,517 06
Summer session	6,397 36	6,708 47	671 56	3,287 40	17,064 79
Maintenance and operation	3,581 48	9,979 80	1,959 16	131 35	15,651 79
Total ordinary expenditures	$13,040 16	$96,047 25	$7,449 43	$7,993 88	$124,530 72
Cafeteria	2,629 58	878 00	47 20	202 90	3,757 68
Total expenditures	$15,669 74	$96,925 25	$7,496 63	$8,196 78	$128,288 40

State Teachers College of Fresno—Statement of Expenditures for the Year Ending June 30, 1923.

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Instruction	$3,876 19	$111,981 59	$338 48	$9,612 43	$125,808 69
Administration and general	50 60	16,918 46	310 22	.....	17,279 28
Maintenance and operation	2,796 87	9,345 75	1,391 87	18 61	13,553 10
Total ordinary expenditures	$6,723 66	$138,245 80	$2,040 57	$9,631 04	$156,641 07
Additions and betterments	.....	.....	.....	841 45	841 45
Prior year expense	38 45	.....	49 30	195 00	282 75
Total expenditures	$6,762 11	$138,245 80	$2,089 87	$10,667 49	$157,765 27

Humboldt State Teachers College—Statement of Expenditures for the Year Ending June 30, 1923.

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Instruction	$744 95	$33,293 30	$152 46	$2,252 94	$36,443 65
Administration and general	69 11	6,583 44	1,650 91	.....	8,303 46
Maintenance and operation	1,206 20	2,364 03	1,027 23	461 65	5,059 11
Total ordinary expenditures	$2,020 26	$42,240 77	$2,830 60	$2,714 59	$49,806 22
Additions and betterments	27 83	.....	.....	6 30	34 13
Total expenditures	$2,048 09	$42,240 77	$2,830 60	$2,720 89	$49,840 35

State Teachers College of San Diego—Statement of Expenditures for the Year Ending June 30, 1923.

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Instruction	$7,258 64	$103,251 67	$984 48	$2,100 15	$113,594 94
Administration and general	611 47	12,084 02	3,312 72	815 26	16,823 47
Maintenance and operation	3,577 46	12,815 47	3,446 61	714 09	20,553 63
Total ordinary expenditures	$11,447 57	$128,151 16	$7,743 81	$3,629 50	$150,972 04
Additions and betterments	562 85	.....	41,414 73	9,476 42	51,454 00
Cafeteria	1,880 32	540 71	171 83	37 40	2,630 26
Prior year expense	19 76	.....	2 00	.....	21 76
Total expenditures	$13,910 50	$128,691 87	$49,332 37	$13,143 32	$205,078 06

SECTION VII. STATISTICS OF STATE TEACHERS COLLEGES.

TABLE No. 23-J—Continued.

State Teachers College of San Francisco—Statement of Expenditures for the Year Ending June 30, 1923.

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Instruction	$6,104 56	$120,588 45	$2,878 58	$5,461 24	$135,032 83
Administration and general	----------	13,869 96	4,206 90	137 35	18,214 21
Maintenance and operation	2,477 92	9,934 04	2,762 71	39 20	15,213 87
Total ordinary expenditures	$8,582 48	$144,392 45	$9,848 19	$5,637 79	$168,460 91
Additions and betterments	----------	----------	----------	5,951 64	5,951 64
Total expenditures	$8,582 48	$144,392 45	$9,848 19	$11,589 43	$174,412 55

State Teachers College of San Jose—Statement of Expenditures for the Year Ending June 30, 1923.

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Instruction	$4,198 36	$151,670 68	$2,469 00	$6,661 70	$164,999 74
Administration and general	45 28	24,540 50	4,035 77	81 45	28,703 00
Maintenance and operation	5,243 77	16,228 00	5,270 17	1,013 49	27,755 43
Total ordinary expenditures	$9,487 41	$192,439 18	$11,774 94	$7,756 64	$221,458 17
Additions and betterments	----------	----------	20,054 33	----------	20,054 33
Total expenditures	$9,487 41	$192,439 18	$31,829 27	$7,756 64	$241,512 50

State Teachers College of Santa Barbara—Statement of Expenditures for the Year Ending June 30, 1923.

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Instruction	$3,342 37	$69,638 01	$ 449 85	$1,738 60	$75,168 83
Administration and general	30 99	12,240 00	2,790 54	85 05	15,146 58
Maintenance and operation	765 94	7,862 28	1,428 42	553 98	10,610 62
Total ordinary expenditures	4,139 30	$89,740 29	$4,668 81	$2,377 63	$100,926 03
Additions and betterments	1,253 44	----------	804 75	1,772 04	3,830 23
Total expenditures	$5 392 74	$89,740 29	$5,473 56	$4,149 67	$104,756 26

SECTION VII. STATISTICS OF STATE TEACHERS COLLEGES.

TABLE No. 23-K.

State Teachers College of Chico—Statement of Expenditures for the Year Ending June 30, 1924.

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Instruction	$2,976 21	$60,479 11	$550 98	$2,304 65	$66,310 95
Administration and general	102 77	9,758 26	1,573 19	208 83	11,643 05
Maintenance and operation	5,023 80	10,229 76	2,311 84	663 62	18,229 02
Total ordinary expenditures	$8,102 78	$80,467 13	$4,436 01	$3,177 10	$96,183 02
Additions and betterments			362 23	25,600 00	25,962 23
Total expenditures	$8,102 78	$80,467 13	$4,798 24	$28,777 10	$122,145 25

State Teachers College of Fresno—Statement of Expenditures for the Year Ending June 30, 1924.

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Instruction	$2,386 10	$98,613 70	$ 198 57	$3,271 56	$104,469 93
Administration and general		14,009 03	1,748 54		15,757 57
Maintenance and operation	1,556 01	9,967 29	1,282 18	181 50	12,986 98
Total ordinary expenditures	3,942 11	$122,590 02	$3,229 29	$3,453 06	$133,214 48
Additions and betterments	1,773 27		6,995 44		8,768 71
Prior year expense	20 80			210 47	231 27
Total expenditures	$5,736 18	$122,590 02	$10,224 73	$3,663 53	$142,214 46

Humboldt State Teachers College—Statement of Expenditures for the Year Ending June 30, 1924.

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Instruction	$387 38	$28,800 00	$ 100 00	$348 93	$29,636 31
Administration and general	124 60	6,460 66	1,126 16	4 56	7,715 98
Maintenance and operation	957 14	2,851 72	819 19	656 55	5,284 60
Total ordinary expenditures	$1,469 12	$38,112 38	$2,045 35	$1,010 04	$42,636 89
Additions and betterments				1,275 00	1,275 00
Total expenditures	$1,469 12	$38,112 38	$2,045 35	$2,285 04	$43,911 89

State Teachers College of San Diego—Statement of Expenditures for the Year Ending June 30, 1924.

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Instruction	$6,438 46	$82,085 00	$1,045 97	$1,431 72	$91,001 15
Administration and general	308 81	10,730 00	2,241 83	3 05	13,283 69
Maintenance and operation	1,638 22	13,154 40	2,086 53	214 81	17,093 96
Total ordinary expenditures	$8,385 49	$105,969 40	$5,374 33	$1,649 58	$121,378 80
Additions and betterments	53 31		25,886 16	21,658 76	47,598 23
Prior year expense	3 66		22 95		26 61
Total expenditures	$8,442 46	$105,969 40	$31,283 44	$23,308 34	$169,003 64

SECTION VII. STATISTICS OF STATE TEACHERS COLLEGES.

TABLE No. 23-K—Continued.

State Teachers College of San Francisco—Statement of Expenditures for the Year Ending June 30, 1924.

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Instruction	$2,759 21	$95,990 12	$2,729 92	$1,446 87	$102,926 12
Administration and general	660 00	13,779 96	1,134 86	----------	15,574 82
Maintenance and operation	1,987 42	8,189 70	4,192 42	48 51	14,418 05
Total ordinary expenditures	$5,406 63	$117,959 78	$8,057 20	$1,495 38	$132,918 99
Additions and betterments	----------	----------	----------	3,508 96	3,508 96
Total expenditures	$5,406 63	$117,959 78	$8,057 20	$5,004 36	$136,427 95

State Teachers College of San Jose—Statement of Expenditures for the Year Ending June 30, 1924.

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Instruction	$3,299 96	$140,152 44	$1,475 90	$2,222 49	$147,150 79
Administration and general	141 07	18,473 05	3,073 96	----------	21,688 08
Maintenance and operation	5,120 11	16,071 80	4,268 20	434 44	25,894 55
Total ordinary expenditures	$8,561 14	$174,697 29	$8,818 06	$2,656 93	$194,733 42
Additions and betterments	----------	----------	162,207 54	4,892 41	167,099 95
Total expenditures	$8,561 14	$174,697 29	$171,025 60	$7,549 34	$361,833 37

State Teachers College of Santa Barbara—Statement of Expenditures for the Year Ending June 30, 1924.

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Instruction	$1,941 78	$58,104 72	$ 412 31	$1,969 41	$62,428 22
Administration and general	452 23	10,675 20	1,292 74	203 10	12,623 27
Maintenance and operation	561 13	6,014 03	2,301 04	177 98	9,054 18
Total ordinary expenditures	$2,955 14	$74,793 95	$4,006 09	$2,350 49	$84,105 67
Additions and betterments	----------	1,996 78	1,775 48	----------	3,772 26
Total expenditures	$2,955 14	$76,790 73	$5,781 57	$2,350 49	$87,877 93

SECTION VIII.

STATE SPECIAL SCHOOLS.

Table No. 24-A. California Polytechnic School: Teachers, Enrollment and Graduates for the Years Ending June 30, 1923, and June 30, 1924.

Table No. 24-B. California Polytechnic School: Expenditures for the Years Ending June 30, 1923, and June 30, 1924.

Table No. 24-C. California Polytechnic School: Grounds and Property.

Table No. 24-D. California Schools for the Deaf and the Blind: Teachers and Enrollment for the Years Ending June 30, 1923, and June 30, 1924.

Table No. 24-E. California Schools for the Deaf and the Blind: Expenditures for the Years Ending June 30, 1923, and June 30, 1924.

Table No. 24-F. California Schools for the Deaf and the Blind: Grounds and Property.

TABLE No. 24-A.

California Polytechnic School: Teachers, Enrollment and Graduates for the Years Ending June 30, 1923, and June 30, 1924

	1922-1923			1923-1924		
	Men	Women	Total	Men	Women	Total
Number of teachers employed	16	9	25	11	3	14
Enrollment classified by grades—						
First year	75	16	91	19	.....	19
Second year	34	7	41	40	1	41
Third year	19	5	24	22	5	27
Fourth year	21	9	30	17	4	21
Unclassified	50	.....	50	3	.....	3
Total	199	37	236	101	10	111
Enrollment classified by courses—						
Agriculture	20	.....	20	16	.....	16
Mechanics	122	.....	122	81	.....	81
Household arts	.....	37	37	.....	.....	.....
Printing	7	.....	7	4	10	14
General	50	.....	50	.....	.....	.....
Total	199	37	236	101	10	111
Number of graduates	14	6	20	17	1	18

TABLE No. 24-B.

California Polytechnic School: Expenditures for the Years Ending June 30, 1923, and June 30, 1924.

YEAR ENDING JUNE 30, 1923:

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Instruction	$9,848 66	$60,883 71	$2,568 48	$6,837 60	$89,138 45
Administration and general	1,892 16	17,581 43	6,792 60	396 26	26,662 45
Maintenance and operation	394 32	3,381 25	1 25	294 71	4,074 53
Total ordinary expenditures	$12,135 14	$90,946 39	$9,365 33	$7,528 57	$119,875 43
Dormitory	64 22	1,277 16	293 07	57 91	1,692 36
Cafeteria	8,975 45	4,039 23	225 17	275 83	13,515 68
Prior year expense	.....	.....	156 73	.....	156 73
Total expenditures	$21,174 81	$96,162 78	$10,040 30	$7,862 31	$135,240 20

YEAR ENDING JUNE 30, 1924:

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Instruction	$1,861 56	$33,187 84	$3,408 99	$98 07	$38,556 46
Administration and general	821 92	10,339 73	4,155 74	6 57	15,323 96
Maintenance and operation	159 62	2,635 20	564 15	8 35	3,367 32
Total ordinary expenditures	$2,843 10	$46,162 77	$8,128 88	$112 99	$57,247 74
Prior year expense	.....	.....	5,447 54	.....	5,447 54
Total expenditures	$2,843 10	$46,162 77	$13,576 42	$112 99	$62,695 28

TABLE No. 24-C.

Grounds and Property.

	1922-1923	1923-1924
Area of grounds (also control water rights only on 699 acres additional)	928.24	928.24
Value of grounds, buildings and equipment	$490,000 00	$480,000 00

TABLE No. 24-D.

California Schools for the Deaf and the Blind: Teachers and Enrollment for the Years Ending June 30, 1923, and June 30, 1924.

	1922-1923	1923-1924
Teachers employed—		
Men	17	15
Women	24	20
Total	41	35
Enrollment—School for the Deaf—		
Boys	117	114
Girls	69	70
Total	186	184
Enrollment—School for the Blind—		
Boys	51	50
Girls	47	54
Total	98	104

TABLE No. 24-E.

California Schools for the Deaf and the Blind: Expenditures for the Years Ending June 30, 1923, and June 30, 1924.

YEAR ENDING JUNE 30, 1923.

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Instruction	$1,671 06	$70,653 67	$3,842 88	$1,510 78	$77,678 39
Support and subsistence	17,701 77	18,444 42	436 03	3,969 56	40,551 78
Care and welfare	384 94	12,709 56	280 67	540 95	13,916 12
Maintenance and operation	9,037 70	13,927 52	21,782 99	506 73	45,254 94
Farming	5,004 66	3,286 68	720 40	785 12	9,796 86
Administration and general	668 75	10,460 70	4,230 31	391 33	15,751 09
Total expenditures	$34,468 88	$129,482 55	$31,293 28	$7,704 47	$202,949 18

YEAR ENDING JUNE 30, 1924:

Function	Materials and supplies	Salaries and wages	Service and expense	Property and equipment	Total
Instruction	$1,522 33	$61,056 00	$4,986 68	$7,272 23	$74,837 24
Support and subsistence	17,919 07	15,622 82	2,808 60	3,451 81	39,802 30
Care and welfare	698 40	10,302 40	325 75	55 89	11,382 44
Maintenance and operation	8,259 06	13,084 27	6,501 83	3,310 62	31,155 78
Farming	1,551 85	641 30	199 69	318 62	2,711 46
Administration and general	695 32	9,200 14	1,737 26	118 27	11,750 99
Total expenditures	$30,646 03	$109,906 93	$16,559 85	$14,527 44	$171,640 21

TABLE No. 24-F.

Grounds and Property.

	1922-1923	1923-1924
Area of grounds, acres	131.35	131.35
Value of grounds, buildings and equipment	$1,335,000 00	$1,335,000 00

(Note: Chapter 899, 1921, provides for division of land for the separate School for the Blind. The division made leaves all present structures on the property reserved for the use of the Deaf, but the buildings are now used jointly by the two schools. For this reason, no division of the valuation of the property is submitted.)

SECTION IX.

JUNIOR COLLEGE DISTRICTS.

Table No. 25-A. Teachers and Average Salaries for the Year Ending June 30, 1923.

Table No. 25-B. Teachers and Average Salaries for the Year Ending June 30, 1924.

Table No. 25-C. Enrollment, Days of School, Average Daily Attendance and Graduates for the Year Ending June 30, 1923.

Table No. 25-D. Enrollment, Days of School, Average Daily Attendance and Graduates for the Year Ending June 30, 1924.

Table No. 25-E. Receipts for the Year Ending June 30, 1923.

Table No. 25-F. Receipts for the Year Ending June 30, 1924.

Table No. 25-G. Expenditures for the Year Ending June 30, 1923.

Table No. 25-H. Expenditures for the Year Ending June 30, 1924.

SECTION IX. STATISTICS OF JUNIOR COLLEGE DISTRICTS.

TABLE No. 25-A.

Teachers and Average Salaries for the Year Ending June 30, 1923.

Name of Junior College	Number of teachers employed				Average salaries paid full time teachers	
	Full time		Part time			
	Men	Women	Men	Women	Men	Women
Chaffey	2		14	15	$3,750	
Fullerton			17	12		
Modesto	6		5	11	2,380	
Riverside	6		18	5	2,500	
Sacramento	7	3	1	6	2,546	$2,520
San Mateo			6	5		
Santa Ana	1	1	1		2,600	2,400
Totals	22	4	62	54		

TABLE No. 25-B.

Teachers and Average Salaries for the Year Ending June 30, 1924.

Name of Junior College	Number of teachers employed				Average salaries paid full time teachers	
	Full time		Part time			
	Men	Women	Men	Women	Men	Women
Chaffey	4				$3,125	
Fullerton	9	9			2,810	$2,234
Modesto	13	2		4	2,554	2,400
Riverside	8	1	14	4	2,666	2,200
Sacramento	9	7	4	5	2,718	2,666
San Mateo			11	9		
Santa Ana	1	3	4	9	2,800	2,666
Totals	44	22	33	31		

SECTION IX. STATISTICS OF JUNIOR COLLEGE DISTRICTS.

TABLE No. 25-C.

Enrollment, Days of School, Average Daily Attendance and Graduates for the Year Ending June 30, 1923.

Name of Junior College	Number of days of school	First year		Second year		In special classes		Total		Male and Female	Graduates			Average daily attendance	Average cost per pupil in average daily attendance
		Male	Female	Male	Female	Male	Femal	Male	Female		Male	Female	Total		
Chaffey	171	80	81	29	37	----------	----------	109	118	227	23	21	44	214	$304 30
Fullerton	171	109	91	11	20	----------	----------	120	111	231	7	18	25	145	275 86
Modesto	174	61	56	22	8	9	29	92	93	185	13	4	17	116	295 30
Riverside	169	72	72	26	30	----------	----------	98	102	200	7	26	33	154	223 70
Sacramento	178	99	68	19	12	20	154	138	234	372	12	10	22	187	269 10
San Mateo	188	16	22	4	4	----------	----------	20	26	46	----------	----------	----------	33	146 08
Santa Ana	175	51	75	16	24	----------	----------	67	99	166	6	13	19	137	180 81
Totals	----------	488	465	127	135	29	183	644	783	1,427	68	92	160	986	*$251 40

*Average

TABLE No. 25-D.

Enrollment, Days of School, Average Daily Attendance and Graduates for the Year Ending June 30, 1924.

Name of Junior College	Number of days of school	First year		Second year		In special classes		Total		Male and Female	Graduates			Average daily attendance	Average cost per pupil in average daily attendance
		Male	Female	Male	Female	Male	Female	Male	Female		Male	Female	Total		
Chaffey	169	60	74	25	42	51	173	136	289	425	18	33	51	168	$616 66
Fullerton	173	31	49	18	24	83	28	132	101	233	13	17	30	119	558 67
Modesto	182	91	50	43	40	28	187	162	277	439	18	29	47	198	252 68
Riverside	171	78	53	38	28	----------	----------	116	81	197	16	19	35	152	279 80
Sacramento	173	86	59	53	29	25	327	164	415	579	18	22	40	233	289 65
San Mateo	184	50	71	14	7	----------	----------	64	78	142	5	3	8	95	123 60
Santa Ana	177	118	188	30	40	----------	----------	148	228	376	13	22	35	194	265 03
Totals	----------	514	544	221	210	187	715	922	1,469	2,391	101	145	246	1,159	*$339 33

*Average.

SECTION IX. STATISTICS OF JUNIOR COLLEGE DISTRICTS.

TABLE No. 25-E.

Receipts for the Year Ending June 30, 1923.

Name of Junior College	Balance on hand July 1, 1922	Received from state apportionment	Received from district tax for maintenance	Received from district tax for building	Received from sale of bonds	Received from miscellaneous sources	Total receipts including balance
Chaffey			$55,296 26			$15,162 79	$70,459 05
Fullerton			55,695 86				55,695 86
Modesto		$ 6,000 00	27,955 24	$87,154 86			121,110 10
Riverside		15,300 00	45,488 09		$100,000 00	1,475 10	162,263 19
Sacramento			55,221 45			573 00	55,794 45
San Mateo			4,820 61				4,820 61
Santa Ana			32,234 92				32,234 92
Totals		$21,300 00	$276,712 43	$87,154 86	$100,000 00	$17,210 89	$502,378 18

TABLE No. 25-F.

Receipts for the Year Ending June 30, 1924.

Name of Junior College	Balance on hand July 1, 1923	Received from state apportionment	Received from district tax for maintenance	Received from district tax for building	Received from sale of bonds	Received from miscellaneous sources	Receipts of transfers from other districts in this county	Receipts of transfers from other counties	Total receipts including balance
Chaffey	$3,490 04	$23,400 00	$53,405 32			$7,896 33	$2,047 97	$18,588 36	$108,828 02
Fullerton	*—4,138 02	16,500 00	54,857 66						67,219 64
Santa Ana	6,372 09	15,700 00	66,761 09						88,833 18
Modesto	61,771 01	13,600 00	35,799 27	$71,598 52		9 90	7,945 36	1,983 04	192,707 10
Riverside	106,294 34	17,400 00	33,241 78			2,901 18			159,837 39
Sacramento	4,850 24	20,700 00	50,373 70			795 86		4,590 09	81,309 89
San Mateo		5,300 00	8,482 20						13,782 20
Totals	$178,639 70	$112,600 00	$302,921 02	$71,598 52		$11,603 27	$9,993 33	$25,161 49	$712,517 33

*Adjustment from prior year not reported.

SECTION IX. STATISTICS OF JUNIOR COLLEGE DISTRICTS.

TABLE No. 25-G.

Expenditures for the Year Ending June 30, 1923.

Name of Junior College	General control	Teachers' salaries	Other expenses of instruction	Library	Operation of school plant	Maintenance of school plant	Fixed charges	Capital outlays	Auxiliary expenses	Laboratory supplies	Total expenditures	Balance on hand
Chaffey	$899 72	$32,348 03	$1,666 65	$76 28	$11,090 60	----------	$17,579 42	$1,849 79	$758 46	$700 06	$66,969 01	$3,490 04
Fullerton	1,350 00	25,500 00	1,000 00	1,980 00	4,220 00	----------	----------	10,000 00	5,450 00	500 00	50,000 00	5,695 86
Modesto	113 08	25,084 39	7 90	2,587 83	20 00	----------	----------	30,935 90	----------	589 99	59,339 09	61,771 01
Riverside	108 19	31,499 00	76 29	553 66	479 65	$206 17	115 00	21,518 90	6 90	1,405 09	55,968 85	106,294 34
Sacramento	1,510 90	37,035 73	1,942 55	2,473 87	3,194 26	3,087 29	36 24	622 80	689 32	351 25	50,944 21	4,850 24
San Mateo	----------	3,474 91	----------	398 87	----------	----------	130 00	----------	816 83	----------	4,820 61	----------
Santa Ana	1,191 70	18,780 63	205 71	2,041 08	1,657 53	386 86	108 00	1,091 32	----------	400 00	25,862 83	6,372 09
Totals	$5,173 59	$173,722 69	$4,899 10	$10,111 59	$20,662 04	$3,680 32	$17,968 66	$66,018 71	$7,721 51	$3,946 39	$313,904 60	$188,473 58

TABLE No. 25-H.

Expenditures for the Year Ending June 30, 1924.

Name of Junior College	General control	Teachers' salaries	Other expenses of instruction	Library	Operation of school plant	Maintenance of school plant	Fixed charges	Capital outlays	Auxiliary expenses	Laboratory supplies	Total expenditures except transfers	Payments and transfers to other districts within this county	Total expenditures including transfers	Balance on hand
Chaffey	$1,686 15	$47,409 61	$2,300 20	$215 69	$11,147 58	$83 81	$40,565 50	$387 60	$51 03	$139 00	$103,986 17	----------	$103,986 17	$4,841 85
Fullerton	1,122 15	45,147 42	458 66	2,059 24	2,688 45	165 50	10,110 00	----------	4,310 08	419 88	66,481 38	----------	66,481 38	738 26
Modesto	5,512 75	39,261 21	----------	1,093 00	2,416 32	54 10	1,323 65	119,765 76	75 69	294 12	169,796 60	$29 09	169,825 69	22,881 41
Riverside	332 63	37,906 35	70 54	788 64	864 35	549 07	783 95	88,906 36	67 64	1,167 06	131,436 59	----------	131,436 59	28,400 71
Sacramento	2,876 30	49,203 34	531 22	5,776 17	6,736 89	394 55	72 48	6,360 84	1,073 30	824 68	73,849 77	3,600 00	77,449 77	3,860 12
San Mateo	330 76	8,457 52	----------	847 78	331 43	651 42	115 00	1,228 87	1,008 27	----------	12,971 05	----------	12,971 05	811 15
Santa Ana	3,375 00	38,995 08	611 88	2,540 54	4,725 91	235 11	132 00	34,495 93	100 00	700 00	85,911 45	----------	85,911 45	2,921 73
Totals	$15,235 74	$266,380 53	$3,972 50	$13,321 06	$28,910 93	$2,133 56	$53,102 58	$251,145 36	$6,686 01	$3,544 74	$644,433 01	$3,629 09	$648,062 10	$64,455 23

Section X.

UNIVERSITY OF CALIFORNIA.

Table No. 26-A. Officers and Faculty of the University for Years Ending June 30, 1923, and June 30, 1924.

Table No. 26-B. Enrollment for the Year Ending June 30, 1923.

Table No. 26-C. Enrollment for the Year Ending June 30, 1924.

Table No. 26-D. Degrees Conferred During the Years Ending June 30, 1923, and June 30, 1924.

Table No. 26-E. Summary of Income, Expenditures and Assets for the Year Ending June 30, 1923.

Table No. 26-F. Summary of Income, Expenditures and Assets for the Year Ending June 30, 1924.

TABLE No. 26-A.

Officers and Faculty of the University (other than Regents) for the Years Ending June 30, 1923, and June 30, 1924.

	1922-1923			1923-1924		
	Deans, directors and other administrative officers	Other officers	Total	Deans, directors and other administrative officers	Other officers	Total
General Administration	29	6	35	26	10	36
Departments at Berkeley	25	749	774	28	800	828
University Farm, Davis	2	14	16	3	21	24
Lick Observatory, Mt. Hamilton	3	21	24	3	20	23
California School of Fine Arts, San Francisco	2	12	14	2	14	16
Hastings College of Law, San Francisco	2	8	10	1	8	9
Medical School, Berkeley-San Francisco	1	230	231	2	211	213
Hooper Foundation for Medical Research, San Francisco	1	16	17	1	8	9
College of Dentistry, San Francisco	1	85	86	1	106	107
California College of Pharmacy, San Francisco	2	8	10	3	10	13
Scripps Institution, La Jolla	3	9	12	3	6	9
Graduate School, Citrus Equipment Station, Riverside	1	17	18	2	20	22
University Extension (other than agriculture)	48	384	432	49	461	510
University Extension in Agriculture	1	129	130	2	125	127
Southern Branch, Los Angeles	9	193	202	13	203	216
Totals	130	1,881	2,011	139	2,023	2,162
Deduct for names counted more than once			72			77
Total individuals			1,939			2,085

TABLE No. 26-B.

Enrollment for the Year Ending June 30, 1923.

	Undergraduate students	Graduate students (academic departments)	Students in professional colleges holding A.B. degree	Total in regular semesters (duplicates eliminated)	Students summer session and inter-session	Total students all duplicates deducted
At Berkeley: (Colleges of Letters and Science, Commerce, Agriculture, Chemistry and Schools of Jurisprudence, Education, Medicine and Architecture.)						
Men	5,453	606	188	6,195	2,995	8,513
Women	3,865	643	34	4,478	2,468	6,581
Totals	9,318	1,249	222	10,673	5,463	15,094
At San Francisco: (Medical School, Hooper Foundation for Medical Research, Hastings College of Law, College of Dentistry, California College of Pharmacy, Degree Curriculum for Nurses.)						
Men	832	----------	----------	832	----------	832
Women	70	----------	----------	70	----------	70
Totals	902	----------	----------	902	----------	902
At Los Angeles: (Southern Branch College of Letters and Science*, and unclassified students and Los Angeles Medical Departments).						
Men	1,069	----------	----------	1,069	605	1,594
Women	2,549	----------	----------	2,549	2,027	4,391
Totals	3,618	----------	----------	3,618	2,632	5,985
At Other Points: (Davis College of Agriculture—Degree Curriculum exclusive of Berkeley group; Mt. Hamilton, Lick Astronomical Department; La Jolla, Scripps Institution for Biological Research; Riverside, graduate school of Tropical Agriculture).						
Men	101	4	----------	105	----------	105
Women	1	----------	----------	1	----------	1
Totals	102	4	----------	106	----------	106
Total resident students, all duplicates deducted:						
Men	----------	----------	----------	----------	----------	11,044
Women	----------	----------	----------	----------	----------	11,043
Total	----------	----------	----------	----------	----------	22,087
*Includes Teachers College Enrollment as follows:						
Men	----------	----------	----------	----------	----------	85
Women	----------	----------	----------	----------	----------	1,766
Total	----------	----------	----------	----------	----------	1,851

NOTE:—For statistics on enrollment of Davis non-degree students, Lick School, School of Fine Arts and Extension Departments and Short Courses, see Table 7, Statistical Addenda, Report of the President of the University.

TABLE No. 26-C.

Enrollment for the Year Ending June 30, 1924.

	Undergraduate students	Graduate students (academic departments)	Students in professional colleges holding A.B. degree	Total in regular semesters (duplicates eliminated)	Students' summer session and inter-session	Total students all duplicates deducted
At Berkeley (Colleges of Letters and Science, Commerce, Agriculture, Chemistry and Schools of Jurisprudence, Education, Medicine and Architecture.)						
Men	5,121	643	222	5,957	3,035	8,416
Women	3,828	758	24	4,576	5,094	8,702
Totals	8,949	1,401	246	10,533	8,129	17,118
At San Francisco: (Medical School, Hooper Foundation for Medical Research, Hastings College of Law, College of Dentistry, California College of Pharmacy, Degree Curriculum for Nurses.)						
Men	879			879		879
Women	113			113		113
Totals	992			992		992
At Los Angeles: (Southern Branch College of Letters and Science*, and unclassified students and Los Angeles Medical Department.)						
Men	1,541			1,541	723	2,156
Women	3,091			3,091	2,517	5,374
Totals	4,632			4,632	3,240	7,530
At other points: (Davis College of Agriculture—Degree Curriculum exclusive of Berkeley group; Mt. Hamilton, Lick Astronomical Department; La Jolla, Scripps Institution for Biological Research; Riverside, Graduate School of Tropical Agriculture.)						
Men	127	3		130		130
Women	4			4		4
Totals	131	3		134		134
Total resident students, all duplicates deducted:						
Men						11,541
Women						14,166
Total						25,707
*Includes Teachers College Enrollment as follows:						
	Men					101
	Women					2,036
	Total					2,137

NOTE.—For statistics on enrollment of Davis non-degree students, Lick Schools, School of Fine Arts and Extension Departments and Short Courses, see Table 7, statistical Addenda, Report of the President of the University.

TABLE No. 26-D.

Degrees Conferred During the Years Ending June 30, 1923, and June 30, 1924.

	* 1922-1923 Total	1923-1924		
		Men	Women	Total
Graduate in Pharmacy	79	83	7	90
Pharmaceutical Chemist	12	4	1	5
Bachelor of Pharmacy		1		1
Doctor of Dental Surgery	69	84	7	91
Bachelor of Laws	27	29	5	34
Doctor of Medicine	38	33	10	43
Bachelor of Education (Southern Branch)	28	10	47	57
Bachelor of Science	470	497	54	551
Bachelor of Arts	1,303	339	701	1,040
Master of Science	47	42		42
Master of Arts	180	63	83	146
Graduate in Agriculture	2	1		1
Doctor of Education	4	1		1
Civil Engineer	1			
Mining Engineer	1	1		1
Juris Doctor	41	40	6	46
Doctor of Philosophy	43	30	4	34
Total degrees in course	2,345	1,258	925	2.183
Honorary degrees (LL.D.)	5	12		12
Grand totals	2,350	1,270	925	2,195

*Not separately reported as to men and women prior to the year 1923-1924.

TABLE No. 26-E.

Summary of Income, Expenditures and Assets for the Year Ending June 30, 1923.

Income.		
From United States		$205,061 46
From California:		
State appropriations	$5,378,394 21	
Other funds	44,954 00	
		5,423,348 21
From students' fees and deposits		1,478,767 39
From hospitals, infirmary and professional colleges		632,852 67
From departmental sales and miscellaneous receipts		504,840 98
From incomes from endowment investments:		
For current use	$301,595 38	
For additions to endowment	20,182 42	
For payments on trust funds	14,492 66	
		336,270 46
From gifts for current use	$120,513 51	
From gifts for buildings, equipment, etc.	541.784 75	
From gifts for endowment	180,793 63	
		843,091 89
From withdrawals from endowment funds used as income		977 12
Total		$9,425,210 18
Expenditures.		
Administration	$308,382 57	
General maintenance, operation, etc.	404,340 78	
Land, buildings, improvements, alterations, etc.	2,305,755 21	
Education and research	6,202,848 09	
Scholarships, fellowships, and prizes	71,769 45	
Miscellaneous expenditures not classified	371,486 59	
Payments to beneficiaries of trust funds, etc.	17,440 63	
Additions to endowment funds	345,163 63	
Total		$10,027,186 95
Assets.		
Real estate in Berkeley	$2,068,318 06	
Buildings and improvements in Berkeley	7,077,620 48	
Real estate and improvements not in Berkeley	5,157,882 75	
		$14,303,821 29
Investments (bonds, stocks, notes, real estate, etc.)		4,417,721 60
Real estate acquired in lieu of cash		8,751,962 29
Cash, accounts receivable, stores on hand, etc.		3,545,699 18
Total		$31,019,204 36

TABLE No. 26-F.

Summary of Income, Expenditures and Assets for the Year Ending June 30, 1924.

Income.		
From United States		$205,061 46
From State of California:		
State appropriations	$4,954,576 82	
Other funds	41,046 50	
		4,995,623 32
From students' fees and deposits		1,483,349 18
From hospitals, infirmary and professional colleges		667,187 52
From departmental sales and miscellaneous receipts		532,741 77
From income from endowment investments:		
For current use	$322,920 99	
For additions to endowments	22,692 75	
For payments on trust funds	16,929 24	
		362,542 98
From gifts for current use	$202,432 82	
From gifts for buildings, equipment, etc.	508,381 37	
From gifts for endowment	732,189 57	
		1,443,003 76
From withdrawals from endowment funds used as income		4,149 64
Total		$9,693,659 63
Expenditures.		
Administration	$318,279 95	
General maintenance, operation, etc.	411,328 47	
Land, buildings, improvements, alterations, etc.	1,708,679 29	
Education and research	6,521,278 29	
Scholarships, fellowships, and prizes	89,893 16	
Miscellaneous expenditures not classified	398,870 33	
Payments to beneficiaries of trust funds	22,668 79	
Additions to endowment funds	846,753 61	
Total		$10,317,751 89
Assets.		
Real estate in Berkeley	$2,266,440 16	
Buildings and improvements in Berkeley	8,216,109 42	
Real estate and improvements not in Berkeley	5,454,393 47	
		$15,936,943 05
Equipment		4,657,747 96
Investments (bonds, stocks, notes, real estate, etc.)		9,584,566 26
Cash, accounts receivable, stores on hand, etc.		3,385,255 57
Total		$33,564,512 84

Section XI.

STATISTICAL SUMMARIES.

Summary No. 1. Kindergarten Schools.
Summary No. 2. Elementary Schools.
Summary No. 3. Secondary (High) Schools.
Summary No. 4. Miscellaneous School Statistics.
Summary No. 5. State Teachers Colleges.
Summary No. 6. Recapitulation.

SUMMARY No. 1.

Kindergarten Schools.

	1922-1923	1923-1924
Number of counties maintaining	43	45
Number of separate kindergartens	653	658
Number of teachers employed (all women)	893	977
Number holding certificates for kindergarten and first three grades	(a)798	150
Number holding certificates for kindergarten and first grade	.....	476
Number holding special certificates for kindergarten only	95	351
Number of pupils enrolled:		
Boys	21,538	25,318
Girls	22,136	26,065
Totals	43,674	51,383
Average daily attendance	22,974	26,763
Average number of days schools were open	183	183
Number of visits by county superintendents	684	944
Number of visits by school trustees	549	692
Number of books in libraries	2,828	5,546
FINANCIAL STATISTICS.		
Receipts—		
Balance on hand	$383,819 02	$415,700 97
Taxes for maintenance	2,293,645 50	3,080,930 95
Special taxes for buildings	3,452 00	692 39
Donations and miscellaneous	3,248 05	6,762 94
Totals	$2,684,164 57	$3,504,087 25
Expenditures—		
Salaries of teachers	$1,369,688 38	$1,533,982 71
Contingent expenses (b)	(c)794,714 24	560,803 03
Sites, buildings and furniture	95,412 25	144,603 78
Library books	511 32	1,822 48
Apparatus	8,308 54	16,717 70
Transfers and payments to school districts	.....	796,487 47
Totals	$2,268,634 73	$3,054,417 17
Balance unexpended	$415,529 84	$449,670 08
Average cost per pupil (exclusive of transfers and outlays) on average daily attendance	(c)$94 59	$78 96
Valuation of property—		
Sites and buildings	$281,268 00	$302,954 00
Library books	16,763 00	9,125 00
Furniture, apparatus and equipment	148,904 00	172,341 00
Totals	$446,935 00	$484,420 00
Average salary paid supervisors	$2,012 74	$2,032 40
Average salary paid principals	1,617 41	1,630 00
Average salary paid regular teachers	1,422 49	1,437 00

(a) Certificates for kindergarten—primary reported in 1922-1923 without segregation.
(b) Includes supplies, rents, etc.
(c) Includes certain transfers not reported separately for 1922-1923.

SUMMARY No. 2.

Elementary Schools.

	1922-1923	1923-1924
Number of school districts—		
Regular active—not in union districts	2,965	2,927
Regular active in union districts	390	412
Active union districts	142	149
Joint districts (included in above active districts)	66	66
Suspended districts—not in union districts	133	124
Suspended Districts in union districts	5	4
Number of pupils enrolled in schools maintained—		
Less than 80 days	18	39
81 to 100 days	52	24
101 to 120 days	14	61
121 to 140 days	105	70
141 to 160 days	6,440	8,685
161 to 180 days	240,839	282,286
181 to 200 days	350,923	311,113
Over 200 days	386	59,935
Number of teachers employed—		
Men	1,368	1,523
Women	17,493	18,858
Total	18,861	20,381
Number of teachers holding—		
Secondary certificates	698	729
Elementary certificates	17,002	18,111
Junior high certificates	----------	71
Primary certificates	164	254
Special certificates	997	1,216
Enrollment of pupils (for details see Tables Nos. 8-A and 8-B)—		
In regular elementary schools—		
Boys	308,142	340,919
Girls	290,635	321,294
Total	598,777	662,213
In post-graduate elementary schools—		
Boys	62	39
Girls	77	49
Total	139	88
Number of graduates (for detail see Table No. 9)—		
From regular elementary schools—		
Boys	22,117	22,639
Girls	23,267	23,774
Total	45,384	46,413
From post-graduate elementary schools—		
Boys	2	6
Girls	1	5
Total	3	11
Average daily attendance (see Table No. 10)	488,051	537,638
Average number of days schools were open	181	181
Number of visits by county superintendents	23,577	24,067
Number of visits by trustees and members of boards of education	17,591	19,390
Number of books in school libraries	2,826,982	2,980,126
FINANCIAL SUMMARY.		
(For details see Tables Nos. 12-A, 12-B, 13-A and 13-B)		
Receipts	$82,151,748 76	$81,044,613 91
Expenditures (including transfers)	62,813,028 73	67,241,504 96
Balance unexpended	19,338,720 03	13,803,108 95
Average cost per pupil (excluding outlays and transfers)	82 56	81 24
Total outstanding bonds	70,686,764 00	84,394,852 00
Total valuation of property (Table No. 13-C)	124,959,461 00	144,205,025 00
Average salaries—		
District superintendents—		
Men	3,078 00	3,258 76
Women	2,545 00	2,624 00
Principals—		
Men	2,250 99	2,296 06
Women	1,841 75	1,897 99
Regular teachers—		
Men	1,669 88	1,699 16
Women	1,600 63	1,574 57
Supervisors of subjects—		
Men	2,767 85	2,691 38
Women	2,438 36	2,432 80
Special teachers of subjects—		
Men	1,868 80	1,911 17
Women	1,587 40	1,742 08

SUMMARY No. 3.

Secondary (High) Schools.

	1922-1923	1923-1924
Types of high school districts—		
County	7	7
City	34	34
District	29	29
Union	202	204
Joint and joint union	22	22
Totals	294	296
Total number of high schools	364	394
Teachers in regular high school—		
Regular—men	2,691	3,014
Regular—women	4,777	5,378
Special and part time—men	441	378
Special and part time—women	618	507
Teachers in junior college departments exclusively—		
Regular—men	----------	7
Regular—women	----------	3
Special and part-time—men	2	4
Teachers in all departments—		
Men	3,134	3,403
Women	5,395	5,888
Totals	8,529	9,291
Number holding regular secondary certificates	5,000	5,494
Number holding special secondary certificates	3,527	3,671
Number holding junior high certificates	2	126
Enrollment (for details see Tables 16-A, 16-B, 16-C)—		
In regular high school—		
Male	65,995	74,091
Female	71,277	79,751
In special and part-time classes—		
Male	27,094	28,546
Female	26,159	29,019
In junior college departments—		
Male	721	814
Female	695	804
In evening schools—		
Male	43,591	51,183
Female	34,562	41,935
Enrollment in all departments—		
Male	137,401	154,634
Female	132,693	151,509
Totals males and females	270,094	306,143
Average daily attendance	125,529	140,619
Average number of days schools were open	183	183
Number of volumes in libraries	1,698,305	2,304,991
FINANCIAL SUMMARY. (For details see Tables 18-B, 18-C, 18-D and 18-E)		
Receipts	$59,128,534 16	$63,499,155 41
Expenditures (including transfers)	43,525,709 83	49,892,797 02
Balance unexpended	15,602,824 33	13,606,358 39
Average cost per pupil (excluding outlays and transfers)	212 90	211 82
Total outstanding bonds	48,920,400 00	58,397,223 00
Total valuation of property (Tables 18-F and 18-G)	71,954,748 00	89,935,135 00
Average salaries paid principals—		
Men	3,329 57	3,465 29
Women	2,959 54	3,139 29
Average salaries paid regular teachers—		
Men	2,340 73	2,337 79
Women	2,143 72	2,149 81

SUMMARY No. 4.

Miscellaneous School Statistics.

	1922-1923	1923-1924
Cost of teachers' institutes—		
Instructors	$20,193 16	$20,742 93
Incidental expenses	3,656 84	2,186 30
Totals	$23,850 00	$22,929 23
Cost of trustees' institutes—		
Lecturers	$1,506 22	$1,213 58
Incidental expenses	930 05	1,276 37
Totals	$2,436 27	$2,489 95
Cost of offices of county superintendents (including only amounts paid from general county funds)—		
Salaries, superintendents and deputies	$332,315 21	$360,226 63
Other expenses	123,582 02	117,253 19
Totals	$455,897 23	$477,479 82
Cost of county boards of education (including San Francisco)—		
Board members' per diems	$50,436 75	$51,705 00
Other expenses and salaries	121,638 56	141,991 76
Totals	$172,075 31	$193,696 76
Cost of offices of city superintendents (excluding San Francisco)—		
Salaries of superintendents and assistants	$1,009,231 39	$1,059,263 54
Other expenses	222,856 40	218,878 53
Totals	$1,232,087 79	$1,278,142 07

SUMMARY No. 5.

State Teachers Colleges.

	1922-1923	1923-1924
Number of faculty members—		
Full-time:		
Men	80	87
Women	176	149
Part-time:		
Men	22	29
Women	25	32
Number of students enrolled—		
Regular semesters:		
Men	900	889
Women	3,648	3,461
Summer session:		
Men	238	243
Women	2,473	1,786
Extra-hour classes:		
Men	29	139
Women	763	1,533
Total individuals during year (duplicates eliminated):		
Men	990	1,227
Women	5,869	6,289
Total men and women	6,859	7,516
Number of graduates—		
With bachelor of arts degree:		
Men	7	11
Women	21	45
With credentials without degree:		
Men	70	46
Women	1,010	765
Junior college departments:		
Men	62	72
Women	37	66
Total in all departments:		
Men	139	129
Women	1,068	876
Total men and women	1,207	1,005
Enrollment in training schools—		
Elementary:		
Boys	879	805
Girls	941	874
Kindergarten:		
Boys	140	94
Girls	173	143
Number of volumes in libraries at end of year	146,179	151,605
Total current expenditures (see Tables Nos 23-J and 23-K)	$972,795 16	$805,171 27
Total expenditures for other than current operating purposes (including prior year expense, additions, etc., from current and prior appropriations)	$88,858 23	$258,243 22
Total valuation of property (see tables Nos. 23-G and 23-H)	$3,027,469 73	$3,357,041 33

SUMMARY No. 6.

Recapitulation.

	1922-1923	1923-1924
Teachers employed—		
Kindergarten†	893	977
Elementary schools	18,861	20,381
High schools	8,529	9,291
Teachers colleges	303	287
Junior colleges (Junior college districts)	26	66
State special schools	66	49
University of California (faculty and officers)	1,939	2,085
Totals	30,617	33,136
Students enrolled—		
Kindergartens	43,674	51,383
Elementary schools	598,777	662,213
High schools	270,094	306,143
Teachers colleges	6,859	7,516
Junior colleges (Junior college districts)	1,427	2,391
State special schools	520	399
University of California*	22,087	25,707
Totals	943,438	1,055,752
Graduates—		
Elementary schools	45,384	46,413
High schools	16,939	18,868
Teachers colleges	1,207	1,005
Junior colleges (Junior college districts)	160	246
State special schools	42	21
University of California (degrees conferred)	2,345	2,183
Totals	66,077	68,736
Valuation of property—		
Kindergartens	$446,935 00	$484,420 00
Elementary schools	124,959,461 00	144,205,025 00
High schools	71,954,748 00	89,935,135 00
Teachers colleges	3,027,469 73	3,357,041 33
State special schools	1,825,000 00	1,815,000 00
University of California	31,019,204 36	33,564,512 84
Totals	$233,232,818 09	$273,361,134 17
Total expenditures (including outlays, excluding transfers†)—		
Kindergartens	$2,268,634 73	$2,257,929 70
Elementary schools	62,029,254 20	65,894,397 38
High schools	43,028,138 71	49,206,353 57
Teachers colleges	1,061,653 39	1,063,414 49
Junior colleges (Junior college districts)	313,904 60	644,433 01
State special schools	338,189 38	234,335 49
University of California	10,027,186 95	10,317,751 89
Offices of county superintendents of schools	455,897 23	477,479 82
County boards of education	172,075 31	193,696 76
Teachers' institutes	23,850 00	22,929 23
Trustees' institutes	2,436 27	2,489 95
State superintendent of public instruction	26,221 63	18,529 36
State board of education	93,446 17	68,033 25
State board of education—Smith-Hughes funds	282,058 94	315,722 74
Totals	$120,122,947 51	$130,717,496 64

*Excluding extension students and other irregular enrollment.

†Transfers included for kindergarten, 1922-1923; other transfers (between districts) are as follows:

Kindergarten 1923-1924	$796,487 47		
Elementary 1922-1923	783,774 53	1923-1924	$1,347,107 58
Secondary 1922-1923	497,571 12	1923-1924	686,443 45

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